NEW-YORK FARMER,

AND

AMERICAN GARDENER'S MAGAZINE.

VOL. IX.] PUBLISHED MONTHLY, AT NO. 132 NASSAU STREET, NEW-YORK, AT THREE DOLLARS A-YEAR, IN ADVANCE. [No. 12.

D. K. MINOR, and GEO. C. SCHAEFFER, } EDITORS AND PROPRIETORS.

FOR DECEMBER, 1836.

NEW SERIES—VOL. IV.

STATE HISTORICAL SOCIETY
816 STATE STREET
MADISON, WISCONSIN 53706

☞ *This number of the New-York Farmer consists of two sheets—the postage therefore is three cents for any distance under, and five for any distance over, one hundred miles.*

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NEW-YORK FARMER.

DECEMBER 1, 1836.

TO SUBSCRIBERS.

Those indebted to us for the past year, and years, are informed that circulars containing their account, will be forwarded to them. They are also requested to remit at the same time the subscription in advance for 1837.

Subscribers in general are reminded that on January 1st, 1837, their subscriptions for the year become due, they are desired to remit the proper amount as soon as possible

Price of subscription, $3 in advance.

The following is another confirmation of the process for restoring peach trees.

SALEM, October 14, 1836.

DEAR SIR:—It may not perhaps while writing, be amiss to state the method I have successfully employed for destroying the vermin in, and arresting the decay of a peach tree. When I removed in the spring of 1834, to the house where I now reside, there stood in the back yard a dwindling yellow leaved sickly looking peach tree, which I was disposed to cut down. It was however spaired at the request of other members of the family. Early in the Summer the fruit ripened prematurely; were bitter Knotty things, and scarcely fit for any use. I again restored to cut it down, but upon further consideration it occurred to me that it afforded a fit opportunity for experiment. I accordingly took the earth away from it, and exposed the roots to a considerable depth—upon examination I found the bark for some inches below the surface infested with masses of worms, from thickness of a straw, to that of a small needle. All these I endeavored to remove, and carefully cut out all the diseased part of the bark and wood. After this I took hot soap-suds, very strong, and poured it plentifully about the roots and diseased parts of the tree. A short time afterwards either the same day, or a day or two after, I took thick whitewash and coated those parts well with it, and then left it exposed to the action of the weather until winter set in when I filled in the earth about the roots. The next spring the tree evidently bore a more healthy appearance. Still there was here and there a curly leaf, but the fruit was still bitter—prematurely ripe, and imperfect. The past Summer however, the second since the process, has been as flourishing as any tree I have ever seen, has grown surprisingly, and bore an abundance of large fine peaches, of a good flavor. I have no doubt but that a similar course would be found successful in nine cases out of ten in restoring peach trees to a healthy flourishing condition—after they had begun to exhibit strong marks of decay. The whole process cost me but very little more time than I have now spent in describing it.

Yours very respectfully,

Col. R. is again welcome. His communications, the result of experience will be found highly interesting.

CORTLAND VILLAGE, Nov. 1836.

My Dear Sir—I perceive that a correspondent of yours, over the signature of "C." is disposed to cross,examine me a little, in reference to some of the statements made in a former communication. This is as it should be. Not only *the* truth, but *the whole* truth should be known. So far from looking upon C's curiosity as "impertinent," I deem it laudable, and shall cheerfully respond to his inquiries now, and in future. Nothing in my judgment is more paltry, and certainly nothing is more injurious to the interest of agriculture, than *ex-parte* statements, and in nine cases out of ten, they are made by those who write to recommend *their own*. Such men, of course, exaggerate all the excellencies, and cancel the defects of their favorite, or in other words, their own kind. The true breeder is above these mercenary views. To witness nature unfolding her excellencies under the moulding hand of art—each succeeding generation rising above its predecessor in the scale of perfection, beauties developing and imperfections disappearing,—this is his elevated aim, and his full recompense. Such a may man err, but never misrepresent; he may be enthusiastic, but never interested or venal.

But let us return to C. He inquires if I "meant to be understood that 3 lbs. is anything like the average weight of fleece of Saxon sheep in general, even in the best of flocks?" In the "best of flocks," this is certainly *something* like the average weights though perhaps very few, as yet, quite reach it. The celebrated Saxon breeder, Mr. Grove, writes me that his flock, consisting of bearing ewes and *lambs*, averaged this year 2 lbs. 10½ oz.; and the exquisite fineness of his wool may be argued from the fact that he received $1.10 per pound for it. I have received accounts of various other clips (of flocks of ewes and lambs indiscriminately) not differing greatly from this. My own, it will be recollected, I stated at 3 lbs. This included *grown* sheep (ewes) only. Taking full grown sheep alone, I am confident that many pure blooded flocks would come up to the 3 lbs., and none would fall greatly short of it, which deserve to be ranked among "the best." Those familiar with Saxon sheep are aware that owing to the late period at which they are usually yeaned, and the fact that the race have not been bred in reference to such an end, (never being reared for the butcher,) the lambs do not arrive so early at maturity, as those of most other breeds, and that at a year old, their fleece is comparatively light.

In reply to C's third question, I will say, and I declare it with a confidence bordering on certainty, that there can be no doubt that Saxon flocks can be bred up without any "prodigious pains" to the standard of 3 lbs., and *kept* there—and this too, without sacrificing any of their "present fineness." A little of the labor and skill which have been expended in bringing to their present perfection those magnificent cattle the "Improved Short Horns," would effect this and *far greater* results. Sheep breeding has lacked the Coates, the Collings, the Whitakers, the Wetherells and the Berrys.* But if C. wishes something more substantial than mere conjecture, I will inform him that my experience, limited though, comparatively speaking, it is, has abundantly proved to my mind, the correctness of the above positions. The maxim that "*like* produces

* It is but just to remark, that several spirited individuals are exerting themselves to put an end to this state of things—and none have thus far, with greater success, than Mr. Henry D. Grove of Hosic, a gentleman who was bred a shepherd in Germany, and who imported his flock from that country into the United States.

like," is the *cynosure* of the breeder. Individual excellence, *supported by blood* (because accidental excellence can never be relied on,) is almost sure to reproduce its like, and therefore, we have only to *start* at the point, we wish to *maintain*. Let the breeder in getting together the nucleus of his future flocks, emulate the amusing perseverance of Frederick William, of Prussia, in collecting his "tall grenadiers." Let him "select with great care only 15 or 20 in a place, from the choicest flocks,"—as C. seems half disposed to reproach me for having done—and let him select *right*. "Right" in this instance, is a word of narrower import, in my opinion, than many might fancy! As C. has called for a bill of particulars, supposing I digress to give an opinion on this point. The importance of *quality* and *quantity* of wool is sufficiently well understood; but there is an excellence which lies at the foundation of all others, which is almost entirely overlooked among the breeders of fine sheep. I allude to *Form*. One at all acpuainted with physiology, need not be informed that the lungs are the mainspring in the complicated machinery of animal existence, and that their size and unimpeded action determine the perfectness with which they perform their functions, and of consequence, the integrity of the whole machine. The size and action of the lungs depends upon, and is indicated by, the *form*,—which therefore is the criterion of the health and vigor of the animal. A *deep* and *wide* chest gives them full play—one that is of *little depth* and *narrow* of course, affects them directly to the reverse. An animal possessing the first, is almost invariably hardy and thrifty—a good feeder—withstands the vicisitudes of weaer—and is a good breeder and a good nurse. An animal cursed with the last, is delicate and feeble—dainty in its food—is affected with catarrhs, and refuses to eat, at every cold storm—entails on its progeny its own multifarious afflictions—and finally permits that progeny to perish in three cases out of five for lack of food. The last is the best trait in the whole catalogue! The three great points in a sheep, are form—quantity of fleece—and quality of fleece; and the breeder must lay it down as a *rule*, that nothing can atone for a marked deficiency in either. The greatest combination of the three, constitutes the greatest individual excellence, and the nearest approach to perfection.

To make the several questions contained in C's last paragraph, and the answers to them more conspicuous, I quote it entire.

"I wish to ask Col. R. for a little more explicit information in respect to the 'relative ruggedness of the Saxons and Merinos.' The merino he says will 'bare the most abuse.' Is not the merino the toughest animal, and does *not* the Saxon require pampering and nursing to carry them through p severe winter in good order? However his Saxons, 'which stood up to their racks during the intensest cold, uncurled, and remained fat *last* winter, fed and otherwise treated?"

I can make my previous remarks but little more explicit. I have said I thought the merino would "bare the most abuse." This I believe to be because, as a general thing, they have thicker coats to resist the weather, and their low and squatty, but usually broad and well developed forms, have not been sacrificed in the hands of ignorant breeders, to the exclusive mania for fine wool. As far as *blood* is concerned. I believe there is no difference in the relative ruggedness of the two,—but that it depends entirely upon *individual* characteristics. A saxon with the same form, and same coating of wool, will endure as much as a merino. Any kind of sheep, when kept together in large quantities, rexuire "nursing" to carry them through a winter as severe as the last, in "good order,"—but I am not aware that saxons require any peculiar "pampering." *My* saxons, whose treatment has attracted the curiosity of C., some wintered in open sheds facing the south; fed *regularly* three times a day a plenty of good sweet hay in racks under the sheds, (except when the weather was open and fine, and then they were foddered on the snow;) and were given a gill of oats a head daily in troughs under their racks, until towards the yeaning season, when the ewes were fed with turnips. In this way I contrived to get 700 sheep through the winter, as well as most of my neighbors, and my saxons, as I before asserted, remained "fat." Indeed they wintered *rather better than any of my other sheep!* Many, I might almost say hundreds, were witnesses of this fact. During this terrible winter, upwards of 15 per cent. of the whole sheep of Cortland Co., perished, and I am enabled to state, that the mortality was far greater in proportion among the small flocks of the generality of the farmers, (native, one-quarter, and one-half bred merinos) than in the saxon flocks of the large wool growing farmers. Probably however, this was in part, owing to the fact that the latter, take better care of an animal which constitutes their main dependence.

I have the honor to be,
very respectfully,
Your ob't ser'vt,
HENRY S. RANDALL.

Fair of American Institute.

The exhibitions of the American Institute furnish a yearly test of the advance of American industry, as pleasing to the visitor as to the contributor.

During the past exhibition, we spent much time in examining the various articles, and in conversation with many of the exhibitors, among whom we found some of the most ingenious and celebrated mechanics of this or of any country, some of them having procured in Europe a reputation as distinguished as that earned in their native land.

Indeed, we never can witness a display of this kind, without feeling our natural pride strongly excited—we find the national products of our favored country inferior to none, our mineral riches greater, our agricultural results at least equal to those of the old world.

But when we regard the *mind* employed, the ingenuity displayed, particularly in the construction of the more intricate branches of manufactory machinery, we then indeed feel that we are a favored people.

The last, being the Ninth Annual Fair of the American Institute, has exceeded in variety every other exhibition of this Society.

The Fair continued open for nine days, during the whole of which, the spacious grounds of Niblo's Garden were crowded by thousands of visitors, who expressed unanimously their satisfaction.

The display of machinery was most extensive, and arrangements being made by means of a suitable steam engine, the whole apparatus was set in motion. A walk between and around these automatic wonders, gave us constant occupation in preserving our integrity, a step to one side and we should have been transformed into a shoe last by Mr. Blanchard, a turn the other way, and Mr. Cornell would have converted us into staves, without benefit of clergy.

The address delivered before the members and others, by the Hon. Caleb Cushing, was a production of singular merit, the audience one of the largest ever assembled on a similar occasion.

We are indebted to the Journal of the American Institute for the list of Premiums awarded by the Managers of the Fair. We shall insert our own remarks, and afterwards give a description, with cuts, of several of the most important machines.

WOOLLEN GOODS.

The exhibition in this line was highly gratifying. We cannot conceive why prejudices against American broad cloths should exist in the minds of any who have seen these specimens. For our own part, we should feel proud to wear such in preference to any other—indeed it is more than suspected that

our fashionables often purchase splendid English cloths *made in this country*, for high prices.

The flannels, both plain and colored, were much admired, and by the ladies and other good judges, pronounced to be of superior quality.

The blankets, absolutely brought on a drowsy fit, so comfortable, so luxurious did they seem.

Northampton Manufacturing Company, Northampton, Mass., for the best specimen of broadcloths, manufactured from American wool, Bond, Whitwell & Co., agents, 64 Pine-street. *Gold Medal.*

Beecher Manufacturing Company, Waterbury, Conn., for the second best specimen of broadcloths, Steele, Wolcott & Co., agents, 62 Pine-street. *Silver Medal.*

Dudley Woollen Manufacturing Company, Dudley, Mass., for extensive specimens and variety of colored cloths and cassimeres, of daily manufacture, Wales & Plimpton, agents, 40 Pine-street. *Silver Medal.*

Middlesex Manufacturing Company, Lowell, Mass., for a fine specimen of colored broadcloths, and plain and fancy cassimeres, Steele, Wolcott & Co., agents, 62 Pine-street. *Silver Medal.*

Middlesex Manufacturing Company, Lowell, Mass., for a fine specimen of goats' hair cloth, sample of 500 pieces, Steele, Wolcott & Co., agents, 62 Pine-street. *Silver Medal.*

Ballard Vale Company, (John Marland, agent,) for the best specimen of white flannels, Tucker, Dorr & Co., agents, 33 Pine-street. *Silver Medal.*

Buffalo Woollen Manufacturing Company, Buffalo, N. Y., for a superior specimen of blankets, S. Grosvenor & Co., agents, corner of William and Pine streets. *Silver Medal.*

Salisbury Manufacturing Company, for very fine specimens of various colors plain and printed flannels, Burns, Hilliburton & Co., agents, 24 Broad-street. *Silver Medal.*

Wm. De Forest & Co., Naugatuc, Conn., for the best specimen of sattinets, Goodwin, Fisher & Spencer, agents, 46 Exchange Place. *Gold Medal.*

Wolcottville Manufacturing Company, Conn., for an excellent specimen of buckskin and other sattinets, made of Mogadore wool, Wolcott & Goodwin, agents, 29 Pine-street. *Gold Medal.*

WOOL.

The samples of wool were of fine quality, o both of them Medals were awarded.

Charles B. Smith, Torringford, Conn., for the best specimen of wool, sample of 1200 fleeces, Wolcott & Goodwin, agents, 29 Pine-street. *Gold Medal.*

Samuel Lawrence, Boston, Mass., for the second best specimens of wool, sample of a flock, Steele, Wolcott & Co., agents, 62 Pine-street. *Silver Medal.*

SILK AND COTTON GOODS, &C.

How carefully this infant branch of domestic industry has been reared, the articles exhibited during this Fair can testify. No more pleasing sight has been presented to us for a long while. The specimens of Messrs. Du Bouchett & Durant were of great beauty.—The article of *silk worm gut* prepared by the latter, though known to the disciples of Old Isaac Walton, is a new manufacture in this country.

Mr. Durant exhibited his divers articles neatly disposed, and presenting the various stages of the insect from the egg to the perfect moth, the cases also contained specimens of the gut, of raw and sewing silk of different degrees of fineness. It would be unfair to particularize, as all the articles in this department were deserving of commendation, both in the raw material and the various fabrics.

Charles Du Bouchett, New-Haven, Conn., for the best specimen of sewing silk. *Gold Medal.*

Charles F. Durant, Jersey City, N. Jersey, for the first silk worm gut known to the Institute as having been manufactured in the United States. *Gold Medal.*

Charles F. Durant, Jersey City, N. Jersey, for the best specimen of cocoons, and a fine specimen of sewing and raw silk. *Silver Medal.*

Peninah Mabbett, Saratoga County, N. Y., for the second best specimen of cocoons. *Diploma.*

Livingston, Livingston, N. Y., for a fine specimen of reeled silk (second crop). *Diploma.*

Valentine Silk Company, Providence, R. Island, for a fine specimen of silk and cotton goods, silk handkerchiefs, &c., Charles Dyer, agent. *Silver Medal.*

Northampton Silk Company, Northampton, Mass., for a superior specimen of reeled and raw silk, Charles St. John, agent, 118 Broadway. *Silver Medal.*

Mrs. Samuel Church, Bethlehem, Conn., for a fine specimen of reeled silk, S. P. Church, agent, 129 Water-street. *Silver Medal.*

Nantucket Silk Company, for fine specimens of silk and cotton cloth. *Diploma.*

Poughkeepsie Silk Manufacturing Company, B. Arnold, agent, for a beautiful specimen of silk vesting, silk for printing, and silk stock frames. *Silver Medal.*

Brown, Brothers & Co., agents, 63 Pine-street, for the second best specimen of silk and cotton goods. *Diploma.*

Doctor James Manerry, North Carolina, for a fine specimen of raw silk, Brown, Brothers & Co., agents, 63 Pine-street. *Diploma.*

Eliza Evans, Waterford, N. Y., for fine specimens of sewing twist, reeled and raw silk, and cocoons. *Diploma.*

Mrs. Seth Wakeman, Salisbury, Conn., for a fine specimen of cocoons. *Diploma.*

John W. Chambers, N. Y., for fine specimens of cocoons, raised at the Repository of the American Institute. *Diploma.*

John A. May, 554 Broadway, for the best specimen of silk umbrellas. *Silver Medal.*

American Print Works, Fall River, Mass., for the best specimen of chintz prints, Goodwin, Fisher & Spencer, agents, 46 Exchange Place. *Diploma.*

Rahway Print Works, Rahway, N. Jersey, for the second best specimen of chintz prints, B. F. Lee & Co., agents, 54 William-street. *Diploma.*

Benjamin Marshall, New-York Mills, Oneida county, for the best specimen of ginghams and satin jeans, Marshall, Carvill & Taylor, agents, 26 Pine-street. *Silver Medal.*

Louisdale Manufacturing Company, R. Island, for a fine specimen of American nankeen, N. Lord & Co., agents, 39 Broad-street. *Silver Medal.*

A specimen of American or Forsyth Nankeen, formed from the nankeen colored variety of cotton, no dye being used, and the color being original in the article, washing can have no effect. This is a comparatively new article of domestic produce.

Silas Shepard & Son, Taunton, Mass., for a superior specimen of Canton flannel, Holbrook, Nelson & Co., agents, 53 Pine-street. *Silver Medal.*

A fine sample of a popular and useful fabric.

HARDWARE AND CUTLERY.

The appearance of the hardware was fine, in the opinion of the judges, the good qualities were more than skin deep. The first five articles on the list obtained Silver Medals, each excelling in its kind. The articles presented by R. Hoe & Co., presented the greatest variety, the reputation of the firm has been established for a long time.

D. Simmons, Cohoes, N. York, for the best specimen of axes, hammers, and hatchets, Pierson & Co., agents, corner of Front and Broad streets. *Silver Medal.*

Pierce & Wood, Middleborough, Mass., for the best specimen of shovels, Gay & Galloway, agents, corner of Old Slip and Water-streets. *Silver Medal.*

R. Hoe & Co., 29 and 31 Gold-street, for the greatest variety of fine specimens of saws, trowels, cutting knives, cotton gin, and veneering saws. *Silver Medal.*

Thomas W. J. Groves, Southington, Conn., for a fine specimen of hand and back saws. *Silver Medal.*

Blake Brothers, New-Haven, Conn., for a superior mortice lock and latches, Parker, Wilson & Co., agents, 8 Platt-street. *Silver Medal.*

Poughkeepsie Screw Company, Poughkeepsie, N. Y., for the best specimen of wood screws, made by improved machinery, Witherell, Ames & Co., agents, 2 Liberty-street. *Gold Medal.*

The best of all the improved screws of improved times. We have in our possession specimens of the article in every stage, and have compared them with others. They are far superior in strength and neatness of finish—qualities that are wanting in screws prepared by other modes.

The machine is the invention of one of our best mechanics, and does credit to him.

Solomon Andrews, M. D., Perth Amboy, New-Jersey, and 175 Broadway, for a superior combination bank lock. A Silver Medal having been awarded at two former Fairs. *Diploma.*

Holmes & Co., Utica, N. Y., for a superior bank lock. *Diploma.*

Thomas R. Hicks, Wallingford, Conn. for a bell hanger and cutting plyers. *Diploma.*

Harvey & Knight, Poughkeepsie, N. Y. for a fine specimen of flange railroad spikes, Boorman & Johnson, agents, 119 Greenwich-street. *Silver Medal.*

In the mass of articles, some of smaller size were overlooked by us, and this was among the number. We should have taken great pleasure in examining a specimen found worthy of the silver medal.

Israel Coe, Wolcottville, Conn., for a fine specimen of rolled copper and brass, and brass battery kettles. *Gold Medal.*

The specimens of rolled brass and copper were beautiful, while the texture of the article appeared to be of great uniformity; the judges, it appears, were as well pleased; they gave them the gold medal.

Rochus Heinisch, Newark, New-Jersey, for the greatest variety of superior cutlery, John Andrews, agent, 147 Fulton-street. *Gold Medal.*

The samples of American cutlery were beautifully finished; they are said also, to be as useful articles as most that we procure from abroad. To the Bowie knives the term *useful* should not be employed, unless bears and other such *varmint* are to be their victims. They certainly make a handsome article.

W. Wild, 162 Division street, for a superior specimen of penknives. *Silver Medal.*

The specimen of penknives by Mr. Wild, are entirely of his own manufacture, from the handle to the blade, and from close inspection we can answer for the superiority of both.

Eagle Factory, 87 Attorney-street, for a fine specimen of anvils, a superior article. *Silver Medal.*

John Smith, 217 Water-street, for an elegant specimen of japanning. *Diploma.*

Pettibone & Long, 4 Liberty-street, for a fine specimen of scythes, (Harris, manufacturer.) *Diploma.*

Pettibone & Long, 4 Liberty-street, for a handsome specimen of hoes. *Diploma.*

James Bogert, 472 Pearl-street, for a mill saw sett. *Diploma.*

M. Merriman, Jr., New-Haven, Conn., for a window spring and sash fastener, Atwater & Pomeroy, agents, 115 Maiden-Lane.

Andrew Drysdale, Jr., corner of Liberty and Washington-streets, for a superior specimen of horse shoes on hoofs. *Silver Medal.*

There was a neatness in the arrangement of these articles that gave satisfaction, independent of that derived from the superior utility of the shoe itself. Neatly placed upon prepared hoofs they gave a clear insight into their modus operandi.

James Drysdale, 8 Fifth-street, for a good specimen of horse shoes. *Diploma.*

Julius Davis, 92 Chatham-street, for joiners' plains of superior workmanship. *Diploma.*

T. I. Newland, Utica, N. Y., for one brass teakettle. *Diploma.*

New-England Glass Company, Peter Morton, agent, for a superior specimen of glass knobs. *Silver Medal.*

We were struck by the variety of ingenious patterns displayed in this article. The Medallion Knob is to us a new article, and in its different forms, cannot fail to become popular, or what is still better, fashionable.

BUGGY RAILINGS, COACH SPRINGS, &c.

In these articles we are again reminded of the perfection of modern mechanics. Strength and symetry of form are combined, and we now can have a carriage of proper strength, without the former awkwardness of size and weight.

Joseph W. Lees, Newark, New-Jersey, for the best specimen of coach springs. *Silver Medal.*

Lewis Alling, Newark, New-Jersey, for the 2d best specimen of coach springs. *Diploma.*

James N. Joraleman, Newark, New-Jersey, for the best specimen of elliptic springs, coach steps and railroad springs. *Gold Medal.*

George Dunn, Newark, N. J., for the best specimen of buggy railings, and dash frames of excellent mechanism and workmanship. *Silver Medal.* And $30 deposited with the Institute for the successful competitor.

Wm. H. Sanders, Hastings, N. Y., for a good specimen of coach axles. *Diploma.*

GRATES, KITCHEN RANGES, STOVES, &c.

Ward, Goadby & Co., 137 Grand-street, for the best specimen of German silver, reflecting grates, (Doct. William Anderson's patent.) *Silver Medal.*

A beautiful contrivance for reflecting the heat into the room, executed in a beautiful metal. This grate appears to be getting into favor, many of our new houses are being fitted up with them.

Edward Smylie, 73 Henry-street, for the 2d best specimen of grates. *Silver Medal.*

S. Pierce, for the best kitchen range, Lockwood & Andrews, manufacturers, 364 Broadway. *Gold Medal.*

"The proof of the pudding is the eating." This adage was verified by the proprietor, who kept his range in constant operation and puddings and pies, as well as more substantial fare, were turned out in great abundance.

This is certainly the best arranged cooking apparatus that we have seen; those who use it, speak well of it.

James Atwater, New-Haven, Conn., for the best specimen of stoves, Atwater and Pomeroy, agents, 115 Maiden-Lane. *Silver Medal.*

These stoves, likewise, kept in operation, were among the most beautiful in appearance, and possessing several capital qualities, obtained the silver medal.

Smith & Sherman, 207 Water street, for the 2d best specimen of stoves, (Olmstead's patent.) *Silver Medal.*

We consider that Prof. Olmstead has become a public benefactor in giving to the community this form of stove. When men of science turn their attention to such matters, we may confidentially expect some happy result.

We think the principal of this stove is the best for inhabited apartments, of any that we have ever seen; we have made trial of the article ourselves and speak from experience. The perfect management of the heat is a great feature in the stove, the circulation of the warm air, is another.

This, too, is the only stove fit for sleeping apartments, if we must have fire to sleep by.

For a detailed account of the principle of operation of the stove, as well as drawings, &c. We refer to the recent No. of the Railroad Journal, containing Prof. Olmstead's article on the subject.

Jordan L. Mott, 233 Water-street, for an excellent specimen of coal cooking stoves. *Diploma.*

Wm. Morrison, 54 Bowery, for a fine specimen of coal cooking stoves. *Diploma.*

M. N. Stanley & Co., 244 Water-street, for a fine specimen of rotary coal cooking stoves. *Diploma.*

J. S. Gold, 84 Nassau-street, for a fine specimen of Franklin office stoves and union oven. *Diploma.*

George J. Lorton, 200 Canal-street, (apprentice,) for a hall stove of good workmanship. *Diploma.*

HOLLOW WARE AND CASTINGS.

Bartlett Bent, Jersey city, New-Jersey, for the best specimen of hollow ware. *Silver Medal.*

Wm. Cumberland, 421 Munroe-street, for the best specimen of enamelled hollow ware. *Diploma.*

We are not aware that the manufacture of enamelled hollow ware is carried on elsewhere in this country.

The art is a curious one known but to few—though its applications are numerous and useful.

Richards & Damorel, 143 Perry-street, for a cast iron sash and frame. *Diploma.*

SILVER PLATED WARE AND JEWELRY.

The plate and Jewelry furnished a tempting display.

The Silver ware of Messrs. Gardner & Marquand was the most brilliant collection in the room, their beautiful finish and rich designg giving pleasure to all the ladies, the best judges of such matters.

The watch dials of Mr. Mullen were highly pleasing evidences of the perfection to which this gentleman has carried his art.

Baldwin Gardner, 39 Nassau-street, for the best specimen of silver work, a pair of superb pitchers. *Gold Medal.*

Marquand & Co., 181 Broadway, for the 2d best specimen of siver work, elegant pitchers, vase tea set, cake baskets, spoons and forks. *Silver Medal.*

G. M. Usher, 60 Reade-street, for the best specimen of jewelry. *Silver Medal.*

William J. Mullen, 175 Broadway, for the

best specimen of gold and silver watch dials. *Gold Medal.*

Henry Withers, 157 Broadway, for a most beautiful specimen of gold and silver pencil cases. *Silver Medal.*

PRINTING MATERIALS, BOOKS AND STATIONERY.

Next to the pleasure of reading a well written work, is that of sliding the eye over a clean and handsome page.

In blank books the same pleasure exists in writing on the right sort of paper, nicely bound, with good pens filled with rich ink.

All these and "more too" were furnished under this head.

The specimens of wooden type were well made.

The ink we had no chance to try, but presume that as Mr. Davids obtained a silver medal, his "fluid" was not found wanting in any of the important requisites of good ink.

Now that blue ink has become fashionable every wash, dye, decoction or stain that has the proper color is used for ink, neither penetrating the paper nor turning black, both of which are among the prominent properties of the real stuff. Mr. D. is, we believe, the real simon pure in this matter.

David Felt & Co., 245 Pearl-street, for the best specimen of blank books. *Silver Medal.*

Joseph Hegeman, cor. Wall and William-streets, for the 2d best specimen of blank books. *Diploma.*

Thaddeus Davids, 222 William-street, for the best specimens of sealing-wax, wafers, black and red ink, and writing fluid. *Silver Medal.*

Griffin, Willcox & Co., 114 and 116 Nassau-street, for a fine specimen of writing fluid. *Diploma.*

D. Wells & Co., 61 John-street, for fine specimens of wood type. *Silver Medal.*

Linen & Horn, 80 Vesey-street, for a superior specimen of book binding, (Sunday Morning News,) *Silver Medal.*

Samuel Jenks Smith, cor. Beckman and Nassau-streets, for well executed newspaper printing, (Sunday Morning News.) *Silver Medal.*

Conner & Cooke, cor. Ann nnd Nassau-streets, for handsome specimens of bookbinding, from Turner's bindery. *Diploma.*

George Bruce & Co., 13 Chambers-street, for a book of specimens of type, ornaments, borders, &c. *Diploma.*

William Blanc, cor. Duane and Rose-streets, for fine specimens of colored and marble paper. *Diploma.*

James Maxwell, 259 Bowery, for the eagle printing press. *Diploma.*

J. Lemuel Kengslep, 212 Greenwich-street, for the Jefferson printing press.—*Diploma.*

CARPETING AND OIL CLOTHS.

Thompsonville Carpet Manufacturing Co., for the best specimen of carpeting and hearth rugs, Thompson & Co., agents, 13 Spruce-street. *Gold Medal.*

D. Powers & Co., Lansingburg, N. York, for the best specimen of floor oil cloths, Albro Hoyt & Co., agents, 105 Bowery.—*Silver Medal.*

Norwalk Patent Capet Co., Norwalk, Conn., for a fine specimen of felt carpeting, Jessup Swift & Co., agents, 66 Pine-street. *Silver Medal.*

While all the specimens of carpeting and oil cloth were of the first quality—we cannot forbear giving a more extended notice of the last and least known article *Felt Carpeting.* The stuff itself as the name implies is felt, strongly prepared.—The consequence is that no grain, or thread exists in the carpet, which is nothing but a homogenous mass of fibre twisted and wrought in every direction until its great strength and compactness is attained.

One of the greatest advantages of this carpet appears to us to exist in its power of resisting the entrance of dust and dirt—none of which can penetrate. It must also be much warmer than other carpeting, as it prevents any draught from a leaky floor passing through it.

The colors being printed upon it, can be varied at pleasure, and are as firm and lasting as the felt itself.

The pieces that we have seen have the appearance of Brussels carpet, with a very great superiority over that article—they cost about half as much.

LAMPS.

But few specimens of lamps were presented—such as were exhibited were of good quality. There is certainly no domestic comfort equal to that of a good astral lamp, and like certain other domestic blessings, when bad there is no greater curse. Mr. Wignell's lamps are as unlike bad wives as possible.

The specimen of coach lamps attracted great attention. They were finished in the most costly manner, appearing rather to belong to parlor, than stable appointments.

Samuel Wignell, 245 Grand-street, for the best specimen of astral and mantel lamps. *Silver Medal.*

J. L. Gourlay, Newark, New-Jersey, for a most beautiful specimen of coach lamps. *Silver Medal.*

Alonzo Platt, Middletown, Conn., for a union lamp. *Silver Medal.*

SADDLERY, MILITARY EQUIPMENTS AND TRUNKS.

The remark in regard to coach lamps will apply to the articles in this department.

The plated harness was really elegant, it does seem to us that no further progress can be made in this line, without putting upon horses what might better be expended upon human beings.

H. Carter, Newark, New-Jersey, for the best specimen of saddles. *Silver Medal.*

Darcy & Gray, Newark, New-Jersey, for the best specimen of harness and trunks. *Silver Medal.*

Alfred Edwards, Newark, New-Jersey, for the best specimen of forged hames, and a good specimen of saddlery plated ware. *Silver Medal.*

Jude & Ennis, Newark, New-Jersey, for the best specimen of plated saddlery ware. *Silver Medal.*

Isaac Fryer, 275 Pearl-street, for the best specimen of bridle bitts, stirrups, &c.—*Diploma.*

F. W. Widman, Philadelphia, for a most beautiful specimen of swords. *Silver Medal.*

GUNS AND PISTOLS.

Wm. J. Lane, (Tutenburg Manufacturer,) for the best specimen of double barrelled guns. *Diploma.*

John W. Cochrane, New-York, for a specimen of many chambered and non recoiling Rifles. *Gold Medal.*

There could have been but little discussion among the judges as to the award of the Gold Medal to Mr. Cochrane.

The history and details of Mr. C.'s invention have been generally published throughout the Union.

His flattering reception by the different European powers is well known, but no idea of the greatness of his invention can be formed, equal to that derived from his own explanations of his own piece, concluded by a trial with his own hands. Gentlemen of great experience in such matters have assured us that Mr. Cochrane's marksmanship is unequalled—of that we were most firmly convinced, when we saw him drive 9 bullets into the same aperture, in rather less than a minute.

By means of a revolving series of Chambers, with a separate touch hole to each, 9 or 11, or any number of charges that can be placed in the revolving chambers, can be fired in immediate succession.

The impossibility of fire communicating to the other charges was proved by Mr. C., who placed a quantity of loose powder about one percussion cap while he fired off the next. The powder remained unburnt.—The circumstance of the absence of recoil, was satisfactorily accounted for by Mr. Cochrane—indeed his notions on this subject are peculiar, and we shall take a more fitting opportunity to detail them, especially in regard to the economy of powder in his gun.

Gibbs, Tiffany & Co., Southbridge, Mass., for a fine specimen of pistols. *Diploma.*

Col. North, Middletown, Conn., for carabine. *Diploma.*

ENGRAVING AND DYE SINKING.

John Allinson, 20 Mercer-street, for the best specimen of wood engraving. *Diploma.*

W. W. Hooper, 114 Nassau-street, for the 2d best specimen of wood engraving.—*Diploma.*

J. P. Henrich, 5 Tryon Row, for a specimen of bookbinders' stamps. *Diploma.*

S. Stiles & Co., 4 Spruce-street, for a beautiful map of the city of New-York.—*Gold Medal.*

Stephen H. Gimber, 46 Hudson-street, for the best specimen of mezzotinto engraving. *Diploma.*

Frederick Woodcock, Brooklyn, for an excellent specimen of engraving, (blocks for calico prints.) *Diploma.*

George Endicott, 359 Broadway, for the best specimen of lithographic engraving.—*Diploma.*

A. Hanford, 6 Little Green-street, for a specimen of xylographic engraving. *Diploma.*

W. D. Redfield, 123 Mott-street, for a fine specimen of engraving. *Diploma.*

PIANO FORTES AND MUSICAL INSTRUMENTS.

There is no branch of the fine arts more worthy of cultivation with us, than music.—It will soften our asperities of character, and render us more and more attached to social intercourse and enjoyment. In our opinion, this among all classes, is the strongest temperance measure that can be "got up."

Now good music can only be cultivated where good instruments can be procured at moderate prices.

In this view of the case, Messrs. Torp & Love doubly deserved their Gold Medal.—The tone of the various pianos was pleasing. While on this subject we have a suggestion to make to all of our manufacturers of musical instruments. Let them expend in addition one half as much on the interior—upon that part which gives the character as an instrument—as they *throw away* upon unnecessary ornament on the exterior—ornament causing positive injury to tone and durability.

The best pianos that we have ever seen, though made of the finest wood, finished in the most beautiful manner, were rigidly plain in every other respect.

A much better piano could be made for $250 than many that sell for $500, as handsome pieces of furniture.

This is a matter to be looked to by all purchasers, and we advise those who desire to patronize American industry in this branch of manufacture, to procure such instruments only as are specimens of excellence in the musical department, leaving rich and highly ornamented cabinet ware, if they must have it, to shine out in some other and more suitable shape.

The Flute seemed the admiration of all lovers of this popular instrument, the tone far excelling ordinary instruments—it very deservedly obtained the Gold Medal.

Torp & Love, 465 Broadway, for the best specimen of horizontal grand action piano fortes. *Gold Medal.*

John Abbott & Co., Bowery, for the 2d best specimen of horizontal grand action piano fortes. *Silver Medal.*

T. Kearsing & Son, 259 Broadway, for the 3d best specimen of horizontal piano fortes. *Diploma.*

Stodart, Davies & Brothers, Broadway, for a piano forte of fine tone and good action. *Diploma.*

G. & H. Barmore, 120 Barrow-street, for a piano forte of a very fine touch. *Diploma.*

C. H. Eisenbrant, Baltimore, Maryland, for an elegant specimen of clarionets, and a superb brilliant toned flute. *Gold Medal.*

William Mitchell, (apprentice,) 72 Eldridge-street, for a neatly constructed octave flute. *Silver Medal.*

John Rosenbeck, Utica, New-York, for a trombone. *Diploma.*

Barnard & Prior, Sauquoit, New-York, for one harmonist. *Diploma.*

INDIA RUBBER GOODS.

Eagle India Rubber Company, Boston, for the best specimen of india rubber drillings and aprons. *Silver Medal.*

Roxbury India Rubber Company, for an India Rubber camblet cloak, and 2d best specimens of drillings. *Silver Medal.*

New-York India Rubber Company, for the best specimen of India Rubber shoes, and 2d best aprons. J. L. Warner, agent, 41 John-street. *Silver Medal.*

Charles Goodyear, New-York, for a fine specimen of India Rubber cloth, not liable to decomposition from exposure to the sun, also maps. *Silver Medal.*

India Rubber has been applied to so many articles of domestic economy, that it is difficult to keep pace with the inventions or rather patents relative to this substance.

The preparation of Mr. Goodyear is novel, and founded upon principles totally different from those practised upon, in other applications of gum elastic.

It resists many of the agents, having an injurious effect upon crude caoutchouc.—Maps and various specimens of printing and engraving upon this substance were exhibited, giving promise of great durability.

From this article and others exhibited at the Fair, we are confident, that articles of dress can be made, combining the many advantages without any of the disagreeable effects of India Rubber. Its great lightness, will soon cause it to find a place in the wardrobe of our fashionables, who would as soon perish as wear any thing looking like comfortable clothing.

S. C. Smith, 66 Chatham-street, for a fine specimen of India Rubber bootees. *Diploma.*

H. Percivell & Co., Belleville, N. Jersey, for a fine specimen of India Rubber balls and rings. *Diploma.*

GENTLEMEN'S BOOTS AND SHOES.

The articles in the Boot and Shoe line were extremely well made, but we must confess, that from them we obtained a very different notion of the shape, structure, and use of the human understanding, than we did from the study of anatomy. This, however, is the fault of the wearer, not of the maker, who has done every thing in his power, to render this modern instrument of torture, tolerable.

Lorin Brooks, 24 John-street, for the best specimen of cork sole boots, and single sole boots. *Silver Medal.*

Uriah Ryder, 5 Beekman-street, for the best specimen of pumps, and 2d best specimens of single sole and cork sole boots.—*Silver Medal.*

Wilson & Oviatt, Utica, Oneida county, for the best specimen of boot trees and lasts. *Diploma.*

P. G. Nagle, Newark, New-Jersey, for a fine specimen of water-proof boot legs. *Diploma.*

Edward Townley, 148 Canal-street, for a fine specimen of boots and shoes. *Diploma.*

LADIES' BOOTS AND SHOES.

Benjamin Shaw, 71 Canal-street, for the best specimen of ladies' boots. *Silver Medal.*

Wm. J. Watson, 67 Fulton-street, Brooklyn, for the 2d best specimen of ladies' boots. *Diploma.*

Wm. J. Watson, 67 Fulton-street, Brooklyn, for the best specimen of ladies' satin slippers. *Silver Medal.*

Benjamin Shaw, 71 Canal-street, for the 2d best specimen of ladies' satin slippers, and children's shoes. *Diploma.*

MANUFACMURED FURS.

The specimens of skins and caps were very creditable, combining the comfortable with the elegant.

Shepherd Brown, 421 Grand-street, for the best specimen of otter skins, and superior finished hair seal skins and caps. *Silver Medal.*

F. K. Boughton, 168 Water-street, for the best specimen of otter caps. *Silver Medal.*

F. K. Boughton, 168 Water-street, for the 2d best specimen of otter skins. *Diploma.*

Charles C. Plaisted, Brooklyn, N. York, for a fine specimen of otter caps. *Diploma.*

BEAVER AND SATIN HATS.

We plead ignorance in regard to satins, satin beavers, chip, straw, &c. Those who understand them, admired the display.

Isaac M. Henderson, 251 Division-street, for the best specimen of satin beaver hats. *Silver Medal.*

D. W. Clark McClosky, apprentice, 404 Broadway, for the second best specimen of satin beaver hats. *Diploma.*

Willington & Tombs, 329 Broadway, for the best specimen of ladies' and misses' satin and beaver hats. *Diploma.*

S. Tuttle, 208 Chatham-street, for the 2d best specimen of ladies' and misses' satin and beaver hats. *Diploma.*

Edward Mullen, 98 Bowery, for a fine specimen of military hats. *Diploma.*

William H. Wright, cor. West and Spring streets, for a fine specimen of satin hats.—*Diploma.*

LADIES' HATS.

Mrs. Harrison, 43½ Division-street, for the best specimen of split straw bonnets.—*Diploma.*

Mrs. Harrison, 43½ Division-street, for the 2d best specimen of Florence braid hats. *Diploma.*

George Dryden, 63 Canal-street, for the best specimen of Florence Tuscan bonnets and Dunstable hats. *Diploma.*

Mrs. M. D. Hodge, 353½ Grand-street, for a fine specimen of Florence braid hats. *Diploma.*

FINE ARTS.

Bass Otis, Philadelphia, for full length painitings of Gen. Wm. Henry Harrison, and mechanic and work shop. *Silver Medal.*

John Baker, 350 Houston-street, for a model in clay, (Death of Bushfield.) *Silver Medal.*

A very fair piece of modeling, this and other exhibitions of the same artist show a strong constructive talent, of the results of which we hope to see more.

Frederick Bashard, 219 Cherry-street, for a model of the origin of Corinthian capital. *Diploma.*

Wm. H. Miller, 16 Rivington-street, for specimens of miniature painting. *Diploma.*

Thomas Thomas, 136 Spring-street, for entirely out of our sphere. The quilts certainly made a very fine show and so did the embroidery, but—perhaps it is because from sad experience, we have an unusual dread of unnecessary exercise of those delicate organs—the eyes of those performing such feats of needle work, have called largely upon our sympathies. We notice, indeed, that one was executed by a blind person, whether this misfortune was prior to, or consequent upon, the practice of the art, we are not informed. In the former case, great advantage might be obtained from employing the blind in the exercise of this *beautiful* art, instead of increasing their number by improperly exercising the vision of others.

Nothing could delight us more than a diminution in the specimens of this branch of industry, and a diversion of skill to some, less hazardous employment.

Mrs. George Roberts, Brooklyn, N. York, for a handsome quilt and aprons. *Diploma.*

Madame B. Cohn, 231 Grand-street, for the best specimen of worsted embroidery on cloth, (a piano cover.) *Silver Medal.*

Miss A. L. Cohn, 231 Grand-street, for a fine specimen of worsted work. *Diploma.*

Miss Caroline Barnes, Baltimore, Maryland, for a quilt containing 27,314 pieces. *Diploma.*

Miss R. A. Hunt, 123 Chatham-street, for a fine specimen of worsted work. *Diploma.*

Orphan Asylum, New-York, for fine specimens of needle work, ottomans and embroidery. *Diploma.*

Miss L. D. Eisenbrant, Baltimore, Maryland, for a beautiful flower basket. *Diploma.*

Mrs. G. Vultee, 114 Chatham-street, for the 2d best specimen of plain needle work, (shirts, bosoms, and collars.) *Diploma.*

Mrs. J. C. Smith, 44 Lumber-street, for beautiful imitations of flowers in wax, superior to any ever before exhibited. *Silver Medal.*

When we first saw these flowers, we supposed them to be real dahlias, so perfect was the imitation. We understand the group represented the prize flowers of the exhibition of dahlias, they certainly could not have fallen into better hands, their beau-

a most beautiful specimen of stained glass. *Gold Medal.*

We have heard much said of the loss of the ancient art of staining glass, we do not much regret it, for the modern art is certainly its rival. The windows and other pieces exhibited were most brilliantly colored, one pane we considered a perfect gem. Nothing can be more appropriate for hall and sky lights, than such glass—the art deserves encouragement, and we have those, able to give this stimulus.

Thomas W. Hope, 6th Avenue, for a painting in oil, (a moonlight scence.) *Diploma.*

F. J. Swinton, (aged 17 years,) Quarantine, Statin Island, for a specimen of painting in water color and ink drawing. *Diploma.*

George Heisher, 33 Grand-street, (self taught) for a beautiful oil painting. *Silver Medal.*

William Warren, 35 Warren-street, (17 years of age,) for a fine specimen of miniature painting. *Silver Medal.*

J. Bennett, 205 Broadway, for a view of the city of New-York. *Diploma.*

John F. Holgate, 10 Barclay-street, for a fine specimen of pencil drawings. *Silver Medal.*

W. & J. Gibson, Bowery, for a landscape painting in oil. *Diploma.*

Richard Sealy, 3 Sheriff-street, for a fine specimen of window curtains. *Diploma.*

John Hulme, Newark, New-Jersey, for a fine specimen of painting, (an engine back.) *Diploma.*

James H. Farrand, 219 Hudson-street for a beautiful specimen of transparent window blinds. *Diploma.*

J. Johnson, 149 Spring-street, for a drawing of Hotel, St. Josephs, Florida. *Diploma.*

William Clover, 294 Broadway, for a miniature painting. *Diploma.*

Lewis P. Clover, 294 Broadway, for views of the great fire. *Diploma.*

Francis Carter, 176 Fourth-street, for a fine imitation of Chinese drawing. *Diploma.*

John Whitehead, 15 Chrystie-street, (self taught,) for one portrait. *Diploma.*

FANCY ARTICLES.

Under this head there were many articles

tiful colors and delicate shades being accurately represented.

The following article was also very prettily executed.

Miss Dunlap, 44 Lumber-street, (a pupil to Mrs. J. C. Smith,) for the 2d best specimen of wax flowers. *Diploma.*

S. Butterfield, Oneida county, New-York, for a splendid woven counterpane. *Silver Medal.*

James Graham, Oneida county, for one cotton counterpane, woven by a person 78 years of age. *Diploma.*

Miss M. Hawkes, 140 Mott-street, for an imitation rose bush. *Diploma.*

Mrs. L. Gerring, 185 Fourth-street, for specimens of iron and lamp mats. *Diploma.*

Miss Blandina Smith, (Mechanics' school,) for a beautiful worsted landscape. *Diploma.*

James Mahoney, 451 Broadway, for the 2d best specimen of shirts and bosoms. *Diploma.*

Miss Julia Jacobs, 457 Broadway, for a beautiful specimen of children's embroidered dresses. *Silver Medal.*

Miss K. Minns, New-Jersey, for a fine specimen of wax fruit. *Diploma.*

J. B. Thompson, 170 Broadway, for the best specimen of ready made linen. *Silver Medal.*

Louisa Agers, (blind) 68 Grand-street, for a curious quilted bed spread. *Diploma.*

Miss Inglis, for the best specimen of worked rugs. *Diploma*

Miss Gedney, 51 Sixth Avenue, for the 2d best specimen of ladies' embroidered dresses. *Silver Medal.*

Charles Eyre, 603 Broadway, for a specimen of leather gloves cleaned. *Diploma.*

Mrs. Petit, Scipio, Cayuga county, for a beautiful pair of knit wollen stockings.—*Diploma.*

Mrs. Bishop, 154 Cherry-street, for the best specimen of worsted work, (a basket.) *Diploma.*

Miss Thompson 14 Watts-street, for a handsome specimen of white flowers. *Diploma.*

Carl King, 265½ Broadway and 17 Division-street, for a fine specimen of millenery. *Diploma.*

Miss S. Phelps, New-York, for the best specimen of embroidery, (an infant's dress.) *Silver Medal.*

Mrs. M. E. Dyer, Providence, Rhode Island, for an elegant embroidered merino table cover. *Diploma.*

Mrs. Ross, 14 Thompson-street, for a superior specimen of bread and cakes. *Diploma.*

Mrs. Cooke, New-York, for the best specimen of silk embroidery. *Silver Medal.*

Miss Catharine Coles, (Mechanics' school) for a beautiful specimen of worsted embroidery. *Diploma.*

Mrs. Rridgeway, Brooklyn, New-York, for a handsome thread and bead bag. *Diploma.*

Mrs. Charles Dyer, jun., Providence, R. Island, for a gossimer cape, woven by the silk worm, a great curiosity presented to the American Institute.

Miss Julia Fitz, 26 Rivington-street, for beautiful worsted mat and flowers. *Diploma.*

H. Blanc, 574 Pear-street, for a fine specimen of inlaid straw work. *Diploma.*

Edward Norris, 11 Pearl-street, for a beautiful shell miniature church. *Diploma.*

Mrs. Shults, Lispenard-street, for a fine specimen of animal work. *Diploma.*

Miss M. B. Van Tuyl, New-York, for beautiful colored atlasses. *Diploma.*

Thomas J. Crowen, 567 Broadway, for one case of fancy articles. *Diploma.*

Mrs, C. Nichols, 17½ Division-street, for a beautiful specimen of millenery. *Diploma.*

Mrs. C. Nichols, 17½ Division-street, for a superior silk hat. *Diploma.*

Martha Ann Woodward, 206 Church-

street, for a fine specimen of embroidery.—*Diploma.*

Mrs. Mary A. Boughton, Brooklyn, N. York, for a beautiful feather cape made from the feathers of an owl. *Diploma.*

George Peuscher, 121 Fulton-street, for a beautiful specimen of fancy boxes. *Diploma.*

READY MADE CLOTHING.

Mrs. M. Boniface, corner Broadway and Lispenard-street, for the best specimen of boy's clothing. *Diploma.*

Paul M. P. Durando, 60 Chatham-street. for the 2d best specimen of boy's clothing. *Diploma.*

Gilpin & Ferdon, 200 Chatham-street, for a fine specimen of vests. *Diploma.*

PENMANSHIP.

Charles Edwin Ely, 180 Broadway, for the best specimen of drawn penmanship.—*Diploma.*

Stephen F. Baldwin, (aged 14 years,) 101 Sixth Avenue, for fine specimens of penmanship. *Diploma.*

James F. Crawford, 441 Bowery, for the 2d best specimen of drawn penmanship.—*Hiploma.*

Wm. Jones, 79 Franklin-street, for the best specimen off-hand penmanship. *Diploma.*

John J. Hinchman, 274 Bleecker-street, (aged 15 years,) for specimens of penmanship. *Diploma.*

James W. Davis, 168½ Spring-street, for specimens of penmanship. *Diploma.*

John Cromwell, 114 Wooster-street, for specimens of penmanship. *Diploma.*

LEATHER.

H. Halsey, Windsor, Conn., for the best specimen of seal skins, Brown & Burke, agents, 7 Ferry-street. *Silver Medal.*

A well prepared article

T. & J. Greene, 3 Jacob-street, for the best specimen of morocco leather. *Diploma.*

Allen Peacock, corner Pearl & Beekman streets, for the best specimen of belt leather. *Diploma.*

TURNING.

John P. Collard, 9 Frankfort-street, for a fine specimen of fancy turning. *Diploma.*

Richard Burnton, 189 Hudson-street, for a fine specimen of fancy turning. *Diploma.*

Aaron E. Cogswell, New-York, for a good specimen of plain turning, (tool handles.) *Diploma.*

STOCKS.

Mrs. P. Van Dyke, for the best specimen of stocks. *Diploma.*

W. H. Rodgers, Boston, Mass., for the 2d best specimen of stocks. *Diploma.*

James Buckridge, 175 Nineteeth-street, for the best specimen of bristle stock frames. *Diploma.*

New-York Stock Frame Manufacturing Company, a large and excellent specimen of stock frames made on Goodell & Harvey's power loom. *Silver Medal.*

A great improvement in manufacturing a useful article. We find the enterprize and ingenuity of these gentlemen, exercised upon many of the most common articles in present use, a field of labor inviting many.

MACHINES AND MODELS.

Hiram Phelps, Williston, Vermont, for the best mortising and tenoning machine. *Silver Medal.*

Among the very many mortising and tenoning machines, not before exhibited, the judges gave this the medal. The operation is very beautiful, and in an establishment using steam or water power, we have no doubt that it would prove a useful machine.

John McClintoc, 7½ Bowery, for the 2d best specimen of mortising and tenoning machine. *Diploma.*

Andrew Morse, jun, Boston, Mass., for the model of a ship's capstan. *Diploma.*

H. C. Roberts, Seneca Falls, New-York, for the best churning machine. *Silver Medal.*

J. J. Halsey, New-York, for the 2d best churning machine. *Diploma.*

Samuel S. Allen, for a good specimen of ordinary lever horse power. *Silver Medal.*

Sewell Gleason, Franklin county, for a revolving plane or horse arch power. *Silver Medal.*

A very good method of applying the weight and strength of a horse, for intermitting labor.

Exchange Engine Co., No. 3, Newark, New-Jersey, for the best fire engine. *Gold Medal.*

These engines were most splendidly finished, we hope for the good people of Newark, as well as of New-York, that they may be more looked at than used—in our own case, we fear, we hope without much prospect of success.

Fire Engine Co. No. 15, New-York, for the 2d best fire engine. *Silver Medal.*

E. S. Scripture, Paris, Oneida county, New-York, for a superior notarial press.—*Gold Medal.*

A press possessing decided advantages for the particular use for which it is intended.

A. B. Smith, 7½ Bowery, for a church steeple clock, a good article. *Silver Medal.*

M. N. Stanley, & Co. 244 Water-street, for an excellent hoisting machine, on a new principle. *Silver Medal.*

J. & C. Bruce, Jersey city, for the best cracker and biscuit machine, a gold medal awarded last fair. *Diploma.*

Thomas Blanchard, New-York, for a self directing turning lathe. *Gold Medal.*

One of the most elegant inventions of modern times. The turning of gunstocks and shoe lasts, was a thing unheard of, and much laughed at when proposed.

We have witnessed the application of the same lathe to the turning of ship blocks—the machine for which purpose, (and also for dead eyes,) we had the pleasure of seeing in operation last spring. The block machine does Mr. B. the greatest credit—more especially as we all have before us, the the apparatus of Brunel at Portsmouth, Eng which has hitherto been considered the ne plus ultra of art; but which must now yield to that of Blanchard.

Benjamin Lapham, Waterford, Saratoga county, for an improved power loom. *Gold Medal.*

We were highly delighted with the operation of this loom. It appears to possess several important advantages over other forms. For a detail of the proposed gain in this machine, we refer to the descriptions following this list.

W. P. Brayton, New-York, for an improved throstle spinner. *Diploma.*

A. M. Wilson, Rhinebeck, New-York, for a mowing machine, or grass and grain cutter. *Gold Medal.*

By this machine much time is gained, and labor saved at a critical season of the year.

See description, written by an agriculturist of some note; a cut is also given of the machine in operation.

Benjamin Brundred, Paterson, New-Jersey, for a blowing machine. *Silver Medal.*

John Peckham, Newport, Rhode Island, for a mortising and tenoning machine.—*Diploma.*

D. K. Minor, New-York, for (Page's) mortising machine. *Diploma.*

This machine is in great request among carpenters, being portable and of simple construction.

A cut and description will be found on another page.

Wandle Mace, 249 Elizabeth-street, for a post mortising and rail sharpening machine, (a model.) *Diploma.*

This machine will be of great service to armers, saving the labor of 8 or 10 men a day. Portable and simple in its construction.

Nathan P. Bean, for a winnowing machine. *Diploma.*

Tucker, Baldwin & Co., Guilford, New-Hampshire, for a shingle and clapboard machine. A. Wakeman, agent, 187 Broadway. *Silver Medal.*

This machine invented by Mr. Gors, of Millford, N. Hampshire, is intended to cut lath, shingles and clap boards, by slightly altering certain adjustment in the same machine. The simplicity is a great recommendation to this saw. It is of great service in sawing up slabs and waste stuff.

John Folsom, Hallowell, Maine, for a rotary brush machine. *Diploma.*

D. L. Sherwood, New-Windsor, New-York, for a patent windlass. *Diploma.*

Alfred Thompson, 58 Orchard-street, for a churn of beautiful workmanship. *Diploma.*

Charles H. Baldwin, 185 Hester-street, for two churns of beautiful workmanship.—*Diploma.*

Samuel S. Allen, for a threshing machine. *Diploma.*

[(Continued in the January Number.)

From the Farmer's Magazine of 1815.

MEMOIR OF WILLIAM DAWSON, ESQ., OF GRADEN.

(Continued from p. 350)

Mr. Dawson, the subject of this Memoir was born at Harperton, in Berwickshire, of which his father was tenant, in February 1734. He was sentto England when about 16 years of age for the purpose of acquiring a more correct knowledge of practical agriculture, than was at that time to be obtained in his native county, where modern improvements had not yet commenced. His first residence was with Mr. Ball, agent to the Duke of Leeds, near Sheffield, in Yorkshire, where he continued three or four years. During this period Mr. Dawson regularly took a share in all the operations of a farm, and acquired that expertness in every branch of labor which he found of so much advantage to him in instructing his servants, when he came to adopt the same management on his farms in Scotland. Among other improvements, it was here that he first witnessed the cultivation of turnips according to the best practices of those times. His leisure hours were occupied in extending his knowledge beyond the different parts of manual labor in which his time was principally employed, and particularly in acquiring a considerable degree of skill in the construction of agricultural implements; in which, throughout the course of a long life, he made many useful improvements. From Mr. Ball's Mr. Dawson went into Essex, and resided some time on the estate of Lord Fitzwalter, where he gave his attention chiefly to the different branches of grazing; and he afterwards traveled thro' several other counties of England, accurately examming the best courses of husbandry and storing up for his own use whatever seemed likely to be introduced with advantage into his own country.

On his return to Harperton he immediately began, with the consent of his father, to make trial of such modes of cultivation as seemed adapted to the soil of that farm; in particular, he employed clay-marl to a great extent, at a time when the use of that manure was scarcely known in that district; and instead of dropping the attempt, as 'Lord Minto seems to have done 'he persevered for several years, till better 'access was opened up to lime, and till he 'found that, owing to the trouble and ex-'pense attending marl, he could manure a 'larger extent of ground yearly with lime, 'at a cheaper rate.'* But as the soil of Harperton was not adapted to turnips, he did not commence the culture of this root upon a large scale, till he entered to the farm of Frogden on his own account, in 1759.

The arable land of the farm of Frogden is chiefly of a sandy soil, and was at that time without fences, and otherwise in a very unproductive state so that great exertions in enclosing, cleansing, draining, and manuring the land, were required for several years at the commencement of Mr. Dawson's lease. Here he employed lime to so great an extent, that the proprietor, afraid of the injurious effects which had been often experienced from severe cropping after lime, readily agreed with Mr Dawson for a life-rent lease, at a small advance of rent, in addition to the original one of 19 or 21 years. It is not true, as has been alledged, that Mr. Dawson used so much lime, because the proprietor had obliged himself to pay its original cost.—The whole expense was incurred by himself though his exertions at that time were so extraordinary as to appear to all his neighbors little suited to the circumstances of a tenant. The lime was brought from a distance of almost twenty miles, at first in four-wheeled wagons, drawn by four horses, but afterwards in two-horse carts, to which he always continued to give the preference over wagons.

Draining, which was then very little known in Roxburghshire, was executed by Mr. Dawson in a very effectual manner; and, when he was in want of stones, he had recourse to an expedient which he had seen adopted in Essex With implements contrived for the purpose, the drains were made wide at the top, of the requisite depth, and very narrow at the bottom. He then filled them with broom, placing the bar stalks undermost, and compressing their bushy tops above, through which the earth can penetrate but a very little way. Some of them, says Dr. Douglas,* have lasted upwards

But that for which the agriculture of Scotland is most eminently indebted to Mr. Dawson, is the culture of turnips. Before his time, this valuable root, the foundation of all good husbandry on dry soil, had been introduced by proprietors both in the east and west of Scotland; but it had made very little progress, and produced no improvement in the general state of agriculture, even in what were then considered the best cultivated counties. The farmers of those times, like the lower classes of the tenantry at prsent, had an insuperable aversion to every innovation on their established routine; and viewed the attempts of proprietors, without the least inclination to imitate them. But when Mr. Dawson, himself a rent-paying farmer, cultivated turnips upon an extensive scale, his practice began to be followed by some of his neighbors; and from his example, and by means of the workmen whom he trained, the present most approved mode of cultivating turnips gradually spread over all the south-eastern counties.

Mr. Dawson began the cultivation of turnips at his entry to Frogden farm; but is understood that they were raised in the broadcast manner till 1763, when he adopted the practice of drilling. The first drills were formed by laying two furrow-slices together, leaving a space untouched between each drill; and this firm ground was afterwards raised by a plough that followed; so that every drill or ridgelet consisted of four furrows laid together, instead of two, as at present. Mr. D. himself, when this mode was first tried, held the plough that formed the two furrow ridgelets; and was followed by his best ploughman, who cleaved out the interval that was left between them. At this time, though two horse ploughs were sometimes used, and always by Mr. Dawson, a driver was constantly employed to guide the horses; but in the afternoon of the very first day, a trial was made to dispense with the driver when forming the first ridgelets or feerings; and so evident were the advantages of the ploughman himself directing the horses, that very soon afterwards all the drivers were dismissed. Mr. James M'Dougal, now tenant in the parish of Dinton, in Tweeddale, was the first ploughman in Scotland, that ever drew a straight furrow with two horses, without a driver, and was the first person whom Mr. Dawson employed to form the turnip drills in the way just mentioned. The breadth of the drills were at first 3 feet, but after the land was once thoroughly cleaned, so great a breadth was found unnecessary, and they were accordingly reduced to the present breadth of 30 or 27 inches. The extent of his turnip crop was usually about 100 acres yearly. At first they were consumed mostly by cattle, which were sold throughout the winter and spring, for many years chiefly in Edinburgh market. At this time very few cattle were fattened in Scotland after the grass season; and the profits of this and other branches of Mr. Dawson's management were accordingly considerable. Thus, the predictions of his ruin, which were freely hazarded by his neighbors, were soon succeeded by an irresistible conviction of the superiority of his system, and by the imitation of those practices which were at first very generally ridiculed. Sometime after, however, Mr. Dawson being satisfied of the great benefit which the land received from the turnips being eaten on the ground by sheep, gave up the fattening of cattle; and his whole turnips, latterly, were allotted to sheep alone, with the exception of a small portion carried to his straw-yard cattle, to convert the straw into manure.

Mr. Dawson, for several years after his entry to Frogden, adopted what was called the Norfork rotation, one-half of his arable land being under corn, and the other half under clover and turnips, in equal proportions. But he soon found that his soil was too weak for this constant tillage; and that it was necessary, in order to ensure abundant crops, that his clover division should be left in pasture for three years or more.—This course he ever afterwards persevered in, and all his crops were accordingly more luxurient and productive.

The success which was the just reward of Mr. Dawson's judicious and spirited management induced him to extend his concerns beyond the farm of Frogden; and he afterwards rented the contiguous farms of Morbattle Tofts and Grubbet, about three miles distant. On these farms, the former of which consists of low lying arable land, the latter chiefly of steep hills, better adapted for sheep pasture, Mr. Dawson repeated all his former operations; and the vast improvement effected on the hills of Grubbet, by means of lime, are still conspicuous

* Douglas's Survey of Roxburgshire, p 135.

* Survey of Roxburghshire, p. 131.

of thirty years, without any appearance of failure.

among the pastures of that district, after the elapse of upwards of thirty years.—Such parts of them as were too steep to be frequently brought under tillage, were limed on the surface, after being cleaned by fallow or turnips; and the lime was harrowed in with the grass seeds sown along with the first crop thereafter;—a mode of management by which a small quantity of lime was found to produce very beneficial effects in raising and maintaining the finer grasses, and which, in such situations, ought to be more generally adopted.

The consequence of this liberal and judicious expenditure was soon visible in the increase of his fortune, which enabled him to purchase and improve the estate of Graden, an extensive property adjoining to his farm of Frogden.

During the last twelve or fifteen years of his life, Mr. Dawson retired from the personal superintendence of his farms, which then devolved upon his two sons, the elder of whom still possesses the farms of Morbattle, Tofts and Grubbet; and the younger remained at Frogden till Mr. Dawson's lease was purchased by the proprietor in 1812 for a life annuity of £800. He spent the last years of his life in Edinburgh, where he died, after a few hours illness, on the 29th January 1815, in the eighty-first year of his age. He had been occasionally slightly indisposed for a year or two before with the same disease (an ossification of the heart) which terminated in death; but the general state of his health was good; and he retained the full possession of his mental faculties till his last moment. He married the year preceding his entry to the farm of Frogden, and has left a numerous family in prosperous circumstances.

Mr. Dawson was exceedingly regular in his habits, and most correct and systematical in all his agricultural operations, which were not only well conducted, but always executed at the proper season. His plans were the result of an enlightened and sober calculation; and were persisted in, in spite of every difficulty and discouragement, till they were reduced to pratice. Every one who knows the obstacles that are thrown in the way of all innovations in agriculture, by the sneers of prejudice and the obstinacy of ignorance, and not unfrequently by the evil offices of jealousy and malevolence, must be aware, that none but men of very strong minds, and of unceasing activity, are able to surmount them. Such a man was Mr. Dawson; and to this single individual may be justly ascribed the merit of producing a most favorable change in the sentiments, in regard to the trial of new experiments, as well as in the practice, of the farmers of Scotland. The laboring classes were not less indebted to this eminent person for opening up a source of employment, which has given bread to the young and feeble in almost the only branches of labor of which they are capable in merely rural districts. Most of his servants continued with him for many years; and such as had benefited by his instructions and advice, were eagerly engaged to introduce their master's improvements in other places. His benevolence, which often sought for objects at a distance that were not personally known to him, was displayed not only in pecuniary donations, while the giver frequently remained unknown, but was strikingly evinced in the attention which he paid to the education of the children of his laborers, for whom he maintained teachers at his own expense. If fame were always the reward of great and useful talents there are few men of any age or country that would live longer in the grateful remembrance of posterity than the subject of this memoir.

In concluding this hasty sketch of Mr. Dawson's life, and the improvements introduced by him, it is impossible not to contrast, with a feeling of grateful exultation, the present agricultural state of Scotland with what it was when he commenced his operations in Tiviotdale. Did our limits permit, it might perhaps be neither uninstructive nor inconsistent with the present subject, to carry the contrast and the inquiry to even more remote periods; to trace the fluctuations of that enterprising spirit which, on the extinction of the Border feuds, re-appeared under a more benignant aspect, to enlighten and fertilize the country its wasteful ardor had so often disturbed. It would be curious, too, amidst those changes to observe what various veins of intellect the same excitation discloses in different individuals, and the mutual influence and relation between the useful and ornamental arts. But we cannot here enter upon such investigations. It is enough to notice, that the same remarkable district, the scene of so many bloody conflicts—which trained to war and tumult the turbulent heroes of Border story—the Douglasses, and Homes and Scotts—can boast, in our own times, a host of names more beneficially illustrious. The houses of Home and Elliott have produced Lord Kames, Lord Heathfield, and Lord Minto. Of humbler origin, Leyden and Park, with all the indefatigable intrepidity of their ancestors, have persevered, and (unhappily for the world) have perished in the prosecution of far noble enterprises; and the parish of Ednam, which gave birth to the Poet of the Seasons, also produced the "father of Scottish husbandry"—William Dawson.

From the Baltimore American.

CULTURE OF TEA.

We find in the last number of the Western Review the fullest and most interesting account we have ever met with, of the nature and culture of tea, a commodity which forms the chief bond of connexion between the empire of China, with its population of 350 millions and the rest of the world.

The tea plant is a bushy evergreen shrub, which, if permitted to attain its natural size will grow to the height of 12 feet. In botany it constitutes by itself a distinct genus, of it there is but a single species, the plants yielding the different kinds of black and green teas, being in reality no more than permanent varieties, the result of long culture. The plant has been cultivated in China from time immemorial. The latitudes in which it thrives best are from 23 to 30 north. Like the vine it is cultivated on the sides of hills in preference to plains. It is raised from the seed, and yields its crop in from two to three years.

When the best teas are raised, the plants carefully pruned and prevented from attaining a height exceeding two or three feet. The production of good tea depends upon soil, locality and season, full as much as that of good wine; like it, too, the produce varies according to the care with which the crop is collected and prepared for use. From the same plant, are commonly taken in each season four crops; which is another cause of variety in tea as it appears in market. The younger are the leaves the higher is the flavor. The earliest crop is taken in the beginning of spring, and the last in August.

The growth of teas of sufficiently high flavor to keep for considerable time, and fit in consequence for exportation, was for a long time confined to two provinces—Fokein, that yielded black tea, and Kiangnan, which yielded green tea. Of late years owing to the great demand for teas in Europe and America, the culture has been extended to three additional provinces. The two original provinces, however produce the best; the worst comes from Woping in Canton.

In China, contrary to the usage of the other great despotism of Asia, the soil is private property, and is very minutely subdivided. The leaves of the tea plant are picked by the cultivator's family, and conveyed at once in a fresh state to the market, where they are purchased by a particular class of dealers, who dry them under a shed, and in this imperfect state of preparation dispose of them to a second and higher class of traders, who sort the teas according to their qualities, and after completing the process of manufacture, pack them in chests. The tea arrives in Canton about the middle of October, and the business period of the trade exists from that time to the end of December. The traders in green tea amount in number to about four hundred; the dealers in black are less numerous but more wealthy. They accompany their chests, carried mostly by porters from distances of several hundred miles to Canton. In Canton the sorts quoted for export do not exceed fifteen in number, about eight of which are black and six green, the prices varying from twelve to sixty cents a pound.

In regard to consumption of tea in different countries, the writer remarks that all the nations of Asia, east of Siam and Camboja, are what may be termed habitual and immemorial consumers of tea. With the Chinese themselves, the teapot is in constant requisition from morning until night, with persons of both sexes, of all ages, and all conditions. They use it always without milk, frequently without sugar. Supposing—what is a very reasonable supposition—that each inhabitant on an average, drinks twice as much as each inhabitant of Great Britain, the annual consumption in China would be half a million of tons.

The use of tea in Europe commenced about one hundred and eighty years ago, and in this time the consumption has raised from a nameless fraction to nearly thirty thousand tons. A greater quantity is consumed in Great Britain than in all the rest of Europe and America.

RECIPE TO CURE PORK HAMS.

By E. FOOTE.

7 pounds salt,
3 ozs. salt peter,
6 red peppers,
4 gallons water.

Make a pickle according to these proportions, sufficient to cover your hams well,

by putting the salt, saltpeter and peppers into the water, till the salt is nearly dissolved. Pack your hams in a barrel or other vessel, and pour your pickle on them, stirring it well at the time that the undissolved salt may be all poured to your hams. Be careful that they be all covered with the pickle, and kept so for six weeks; then take them out and wash or rinze them off in clear *clean cold* water, hang them up and let them drain for a day or two, then smoke them with sugar maple or hickory chips or wood green from the tree, which makes the purest and sweetest smoke of any kind of wood I am acquainted with, and makes it entirely unnecessary to put sugar and molasses in the pickle, as I used to do.

My method of smoking is, if in moderate fall or winter weather, to make one smoke in twenty-four hours—if in severe winter weather, two. The object to be aimed at in regulating the smoke is, first, to make as little fire as you can, and make a good strong smoke—second, to let your hams get thoroughly cooled through after each smoke before another is made. Every farmer who uses an axe, knows how rapidly a cold frosty axe collects pyroligeneous acid, or escence of smoke. While hams are cold they collect it as rapidly, and as they become warm it dries into them. If you increase the heat so as to make them drip the fat, you lessen the weight of your hams and injure their flavor. With regard to the credit of my hams in market I will only say, that gentlemen in Cleveland, who have used hams of my curing, pronounce them equal to any they have ever seen, and they command the highest price in market.—[Ind. Far.]

Brooklyn, Ohio, Sept. 1836.

The following flash of humor is from the proceedings of the Worcester County Agricultural Society.

The committee were called upon to discharge a duty, which was much to their taste, in testing some Wine—not old madeira made of whiskey, nor Old Port dyed with logwood, nor sparkling champaigne fresh from the cider cask, but genuine, unadulterated, home-made Wine, made without the admixture of alchohol, from the currents of the garden of Newell Nelson, Esq. of Milford.

The committee did not find time to discuss the question of temperance in its bearing upon this article, but did from time to time find opportunity to discuss this Wine quite freely and after repeated tests and tastes, they are unanimously of opinion, that current wine of Mr. Nelson was truly a "current" article, and if old Milford wine be not as fashionable, it is as palatable as old Madeira. They therefore recommend that a gratuity of $3 be given to Mr. Nelson for his Milford Wine.

All which is respectfully submitted,

C. C. P. HASTINGS, *Chairman.*

SWINE.

[There is Attic Salt enough in the following to pickle all the pork in the County of Worcester.]

The committee on Swine, under the peculiar circumstances of the occasion, beg leave to report chronologically.

At a very respectable meeting of their body, duly notified to be held this morning, at nine o'clock, in the area between the pens, it was found that the Committee was not to be found. One person and one pig only answered to their names on the call of the house. It seemed that there would be nothing to do, and nobody to do it. The solitary grandeur of the situation became oppressive of its sublimity. The chairman conceived that he was in a delicate condition of perplexity. The responsible duties of his elevated official station pressed heavily on the one hand, while on the other, the laws of the society prohibited him from having any opinions of his own, or voting, except in case of division. Of the constitutionality of such enactment doubts might have been entertained: but the scruples which arose, were more entertaining than useful, as nullification was out of the question. The wind from down East blew as coldly as if it had been made from the ghosts of the pine logs described in the specifications of proprietors of Maine townships, or had passed over the consciences of traders in timber lands: and with it came water enough to wash anything but a solid conscience clean. After serious consideration, the chairman solemnly declared to his sole coadjutor, in the language sanctioned by high authority, "our sufferings is intolerable," and made application to the Trustees for relief. By their order, *volunteers* were *impressed*, and five good men and true, selected with reference to excellence of taste and looks, were *compelled* to come in *freely*, to assist in the arduous labors of the day. A most judicious committee having been thus constituted, the multitude of swine rapidly increased, and business advanced prosperously to its consumation.

One boar only graced the anniversary by his presence. The certificate of his owner testified that he possessed every excellence, except good moral character, of which nothing was said. Although much diversity of opinion could not be expected to arise in the plentiful lack of competition, yet the committee considered it dignified to proceed with great deliberation. The only fault they could detect, on careful inspection of this candidate for the honors of the society, was, that like the dog described by Washington Irving, his tail appeared to be curled so tight as to lift his hind feet from the ground. As no reasonable doubt could be entertained, that, on the suggestion of the difficulty, some ingenious inventor would obtain a patent for a machine to straighten such crooks, the committee unanimously awarded *Five Dollars* to the Hon. John W. Lincoln, for this the greatest and best boar they saw.

A fine company of sixteen noble swine had arrived from jail, and were placed in one pen by Mr. John F. Clark. One of them appeared to have been converted by the scarcity of corn to the doctrines of Dr. Graham, the gentleman who, by the practice of his own principles of health, might expect, as the survivors of mortality, at a venerable old age, to be able to write the life of Death. Standing by the fence, and inviting his companions to gnaw their dinner from the society's new chesnut rails, this creature, like the sincere disciple of an illustrious master, contented himself with earnest exhortations to others to reform their luxurious diet without himself partaking of the frugal fare. A breeding sow, attended by one generation of three children, and another of nine, was exhibited by Mr. Clark. This fair image of female loveliness afforded evidence that the phenomena of the science of animal magnetism are not confined to the beauties of Boston. On being struck with the top of an umbrella she fell into a state of somnambulism, like that of a lady whose case has been reported in the newspapers. Lying with closed eyes, consciousness of the approach of the stick was manifested, and strong dissent expressed at renewed applications of the magnetic power. While in this abstracted condition, several questions were proposed, but strange as it may seem, no answers were returned. The committee were of the opinion that the first premium of *five dollars* for the best breeding sow should be given to Mr. Clark. They regretted to see in animals subject to the good discipline of that gentleman, some indications of a contentious disposition and want of sedate behaviour, and recommend that they be sent to the House of Correction, for such term as the improvement of their manners may seem to the keeper, their owner to require.

A breeding sow, with a round dozen of very round and neat little pigs, was exhibited by Mr. Thomas T. Farnsworth. The accomplishments of the mother of this small and interesting family deserved, in the opinion of the committee, the premium of *three dollars.*

"The best weaned pigs not less than four in number" were not offered by any person.

In concluding the detail of their doings, the committee feel it to be their duty to remark that a solemn crisis in the affairs of swine is impending. When corn has been frozen and potatoes parched, when the deposites of the granaries have been removed, and the desolated fields yield no surplus, the inquiry rises with startling force what can the pigs do? It comes home to the pot and plate of every lover of his country. Our lands, our liberties, our wives, our children are dear, and pork is dear also, and grows dearer day by day. The subject is one of vast relations. Where would be patriotism without pork? where virtue, where valor, where ancient faith, where modern degeneracy, without swine? The soul of honor cannot be sustained without the body of bacon. The lamp of love would burn dim without spareribs. The very face of fashion would grow rough without bristles to beautify its smoothness.

But although the prospects of the race have been gloomy as the clouded heavens, that constancy and unconquerable resolution, alluded to by the President, have been found still in the pens. The spirit of the Pilgrims' pigs still animated their successors. Beneath the stormy clouds the committee have heard no swine swear, they have seen none elevating their spirits by depressing other spirits, none stooping to smoke long nines or chew pig tail. There has been no unswinish repining at the allotments of Providence. The only boar of

the festival was noticed to wipe his eyes with his fore foot instead of a pocket handkerchief, as if in tears; but it was ascertained that he was only brushing away the rain drops. Such firmness in wet an affliction deserves the wish that it may be rewarded by sleeping many a long summer day in all the luxury of mud, with the soft green earth beneath, and bright blue sky above.

All which is, as much more might be, most respectfully submitted.

WILLIAM LINCOLN, *Chairman.*

ATMOSPHERE.—The air on the tops of high mountains is so rare as to diminish the intensity of sound, to affect respiration, and to occasion a loss of muscular strength. The blood burst from the lips and ears of M. D. Humbolt as he ascended the Andes; and he experienced the same difficulty in kindling and maintaining a fire at great heights, that Marco Polo the Venetian, did on the mountains of Central Asia.

From the Southern Agriculturist.

AGRICULTURAL ESTABLISHMENT AT MOEGELIN, IN PRUSSIA.

[FROM JACOB'S TRAVELS IN GERMANY.]

About twelve or thirteen years ago, the King of Prussia, who, like his uncle, was always anxious to extend and improve the agriculture of his dominions, invited Von Thaer, who resided near Lunenburg, and whose celebrity was even then great, to settle in his kingdom, to assist in diffusing agricultural knowledge, and, by his management, set an example to the other great landed proprietors, which might stimulate them to adopt similar improvements. His majesty also wished him to conduct a seminary in which the knowledge of the sciences might be applied to husbandry, for the instruction of the young men of the first families.

The estate of Moegelin was given to him to improve and manage, as a pattern farm. It consists of eighteen hundred Berlin morgens, or about twelve hundred English acres. At that time the annual value was estimated at two thousand rix dollars,* but is now supposed to be worth twelve thousand; but some part of that increased value must arise from the buildings that have been since erected. The principal improvement, that of the soil, has arisen from the large flows of sheep, which in summer are folded on the land, and in winter make abundant manure, in houses constructed for their lodgings.

The Royal Institution, of which Von Thaer is the director, and which occupies a considerable portion of his extensive buildings, has three Professors besides himself. One for Mathematics, Chemistry, and Geology, one for Veterinary knowledge; and a third for Botany, and the use of the different vegetable productions in the Materia Medica, as well as for Entomology. Besides these, an experienced agriculturist is engaged whose office it is to point out to the pupils the mode of applying the sciences to the practical business of husbandry.—The course commences in September.—During the winter months, the time is occupied in mathematics, and the first six books of Euclid are studied; and in the summer, the geometrical knowledge is practically applied to the measurement of land, timber, buildings, and other objects. The first principles of chemistry are unfolded. By a good but economical apparatus, various experiments are made, both on a large and small scale. For the larger experiments, the brew-house and still-house, with their respective fixtures, are found highly useful.

Much attention is paid to the analyzation of various soils; and the different kinds with the relative quantity of their component parts, are arranged with great order and regularity. The classification is made with neatness, by having the specimens of soil arranged in order, and distinguished by different colors. Thus, for instance, if the basis of the soil be sandy, the glass has a cover of yellow paper; if the next predominating earth be calcareous, the glass has a white ticket on its side; if it be red clay, it has a red ticket; if blue clay, a brown one. Over these tickets, others of a smaller size indicate, by their color, the third greatest quantity of the particular substance contained in the soil. This matter may appear to many more ingenious than useful, and savoring too much of the German habit of generalizing. The classification of Von Thaer is, however, as much adopted, and as commonly used on the large estates of this country, where exact statistical accounts are kept, as the classification of Linnæus in natural history is throughout the civilized world.

There is a large botanical garden, arranged on the system of the Swedish naturalist, kept in excellent order, with all the plants labelled, and the Latin as well as the German names. An herbarium, with a good collection of dried plants, which is constantly increasing, is open to the examination of the pupils, as well as skeletons of the different animals, and casts of their several parts; which must be of great use in the veterinary pursuits. Models of agricultural implements, especially of ploughs, are preserved in a museum, which is stored as well with such as are familiar in Germany, as with those used in England or other countries. I remarked the absence but of two things used in this country, viz: the mole plough, and a new machine invented for sowing small seeds. The first of these would certainly be of little use in most parts of Germany; and the other is so new, that, excellent as it is, its adoption is by no means general, even in England.

The various implements used on the farm are all made by smiths, wheelers, and carpenters, residing round the institution; the workshops are open to the pupils; and they are encouraged, by attentive inspection, to become masters of the more minute branches of the economy of an estate.

It appeared to me, that there was an attempt to crowd too much instruction into too short a compass; for many of the pupils spend but one year in the institution; and thus only the foundation, and that a very slight one, can be laid in so short a space of time. It is, however, to be presumed, that the young men come here prepared with considerable previous knowledge, as they are mostly between the ages of 20 and 24, some few appeared to be still older.

The sum paid for each pupil is four hundred rix dollars annually; besides which, they provide their own beds and breakfasts. In this country, such an expense precludes the admission of all but youths of goood fortune. Each has a separate apartment. They are very well behaved young men; and their conduct to each other, and to the professors, was polite even to punctilio.

As I have not had an opportunity of visiting Hofwyl, and have met with no account of that Institution, written by any person who is well acquainted with many details in the subject of its agriculture, I cannot make a comparison between that widely-blazoned establishment, and the unostentatious Institution of Meogelin. I was indeed told that the plan and effects were far inferior; but, as my informants were Prussians, I make some allowance for the national vanity, which felt itself piqued that the establishment in Switzerland should be praised most highly, and their Royal Foundation be unknown beyond the boundaries of the kingdom to which it belongs.

* A rix dollar is seventy-five cents.]

From the Quarterly Journal of Agriculture.

HORTICULTURE—COMMON CABBAGE, EARLY YORK CABBAGE, LONDON NEW-YORK CABBAGE, SAVOY, BROCCOLI, AND EARLY WHITE WARWICK PEA.

By Mr. Towers, Author of the Domestic Gardner's Manuel, &c. C. M. H. S.

The *Brassica*, or cabbage tribe, presents us with the most important crops of the season, I mean the period included between the first of June and the two succeeding months. It was proposed to select three of the numerous species, namely, 1st, Common round-headed or hearting *cabbage*—2d, The *Savoy*—3d, *Broccoli*.

1. *The Common Culinary Cabbage, Brassica. oleracea*, Sect. 4. of Decandolle, No. 4. *elliptica*, the Early York and particularly that fine improved variety, now called London New-York Cabbage. All the members of the tribe belong to one family or genus, termed *Brassica:* they are found in the natural order *Cruciferæ*, the leading characters of which are four opposite petals, ranged in the order of a cross; there are four petals or calyx-leaves, six stamens, two of which are rather shorter than the other four, and this latter circumstance gave rise to the name selected by Linnæus to designate the member of the 15th class *Tetradynamia*, a compound Greek word, which indicate the power of *supremacy* of *four* out of six fertilizing organs. It may be of some importance to the farmer and cottager to be informed that, among all the plants of this class or natural order, not one perhaps is possessed of any really deleterious property. Among nearly one thousand species, as Dr. Lindley observes, "scattered over the face of the world, all are harmless, and many highly useful."

The varieties of the cabbage are numerous, but he *who possesses* the best Early York, has that which combines most of the valuable qualities of that excellent vegetable—compactness of heart, firmness, sweet flavor, and convenient size and form; it is also hardy, of very ready culture and occupies but little space. I do not recommend it merely as a *culinary* vegetable; it might, and I think should, be made to rotate with the crops of the farm. It is not my desire now to digress, but I hope on a future occasion to adduce facts which will go far to prove that every farm throughout the kingdom would be improved, and the agriculturist proportionably benefited, by a greatly enlarged rotation. The land has powers and capabilities to double its productive return: We southerns are much indebted to our northern brethren for the lessons of wisdom which their refined system of agriculture has already taught us, but these cultivators, skilful and preserving as they have effectually proved themselves to be, may still advance; and with this conviction before me, I hope I may not be deemed presuming, if, at the earliest opportunity, I venture to attempt to fulfil the intention which

I have alluded, to above, and for which I am collecting the requisite documents.

The *soil* for cabbage should be a sound mellow loam, of a quality usually termed *fat*, or unctuous, wherein the *silex*, which forms its chief constituent, is in a state of extremely minute division, and united to a greater proportion of argillaceous earth (*alumine*,) than most common, gritty soils are; but the chief desideratum of an unctuous loam is the impalpable state of the silex; for I have annalyzed one of the finest loams I ever saw, without being able to detect in it more than five or six per cent. of clayey substances, and scarcely a grain of chalk. But the cabbage will do well in most soils, provided it be exposed to the full influence of light and air, and be not shaded or stifled by trees, shrubs, or buildings.

Seed.—This will retain its vegetative power for three or more years but it is always better to employ that produced in the preceding season, or if two or three year old seed be used, it should be tried in heat, sown in a flower pot: a serious loss of time may be occasioned by a failure of the seed-bed. An ounce of seed will suffice to sow forty square feet, if scattered broadcast, but less will be required if it be sown in drills, six or seven inches asunder; and this method is always advantageous, because the Dutch or thrust-hoe can, at any time, be passed easily between the rows. If cabbage be cultivated in the field, it is calculated that half a pound of seed will afford more plants than will grow on an acre; and it is stated, in recommendation of the vegetable for the purposes of the farm, that if the cabbages be cut, freed from bad leaves, and carried to the cow-yard, "they are more beneficial than hay; given in any proportion, when only combined with straw."

In the *fattening* of neat cattle, an acre of good cabbages may be nearly sufficient for three beasts of from forty to fifty stones each, which have been grazed in the pasture during the summer. A middle-sized bullock, in general, consumes about 100 lbs., in twelve hours."* "Half an acre will be nearly sufficient for 100 sheep, when the crop is good: a sheep consumes nearly 10 to 12 lbs., in twelve hours."—(*Baxter's Agric.*) I have repeatedly tried cabbage in cow feeding, and on every account recommend the substitute of *York cabbages* for the coarser and more bulky varieties.

In *garden-culture*, we have to consider the object of the cultivator; if spring or early summer cabbage only be required, one sowing of a single long row or a small bed will suffice. In the southern or middle counties of England, it is usual to limit the period of sowing between the 6th and 12th days of August; but in the north I presume that the third or fourth week of July should be chosen. Experience has proved that seed sown early in July, will produce plants which are liable to run to seed in the following spring; while, on the contrary, the plants of late sowings rarely acquire strength sufficient to resist the rigors of the winter. *The soil for a seed-bed* ought to be lighter than that used during the future growth of the plants: it should be moved to the depth of a few inches, and made very fine; then, the line being strained tight, the first drill is to be cut by drawing the angle of a hoe in the direction of the line, with its edge resting against it. An inch or less in depth is sufficient; but, as all seeds rise better if they rest upon a true surface, and be closely embraced by the mould, it will be proper to level and compress the bottom of the little drill by patting it with the back of a wooden, round-headed rake, or by placing a long pole, like the handle of a rake, into it, so as to form a sort of groove. In this the seeds are to be scattered as regularly as possible, after which it would be as well to dust them over regularly with a powder composed of two parts (say *pounds*) of powdered quick-lime, one part of coal-soot, and one sixteenth part (one ounce) of flour of sulphur. This mixture is inimical to insects, and does not injure the young plants. The groove is next to be filled up with fine earth, which is to be made firm and even, by pressing it down with the flat of the spade. In like manner, all the other drills may be made and finished. If the weather be showery, and the ground in a moist state, but still free and open to work, nothing more need be done. It sometimes happens, however—as was the case to a very injurious extent throughout the summer of 1835—that the soil is found dry even to dustiness. In that case, as it will not answer to let the critical period pass over, the intended bed should be watered copiously for 3 successive nights, till it becomes completely moist, and a mat or two must be thrown over it during the intervening days. Seeds sown in soil thus prepared, will vegetate very rapidly; for warmth and moisture are the prime actuating agents of vegetative life, as direct *solar* light is that of maturation. Waterings, or rather the ordinary sprinklings, so termed, will prove of no avail, if the seeds have been sown in arid soil, as was fatally proved last year. In hot sunshine, the mat ought to be used till the seeds vegetate. *The seedling plants* will be liable to the attacks of slugs and other enemies; to guard against which, they may be sprinkled with a little of the powder mentioned above; or the spaces of soil between the rows may be covered with dry saw-dust or chaff; but thick sowing is perhaps the most effectual means to secure a sufficient supply, and it is always prudent to practice it, because many seeds are inert; and it is better to displace the supernumeraries by timely thinning, than to have a paucity of plants, nine-tenths of which may perish by accidents. When the first true leaves appear, and acquire a little strength, much of the danger will be past, and the plants ought to be thinned out, so as to stand an inch asunder. Again, as the advance in growth, they ought to be reduced in number till double that space intervene between plant and plant.

Transplanting.—Some gardeners have attempted to obviate this operation; but the roots first produced are few in number, though strong, and of considerable length: the plants also acquire a tall and shanky growth; and above all, it is evident that, if cabbage plants be made to perfect their growth on the site where the seeds were sown, the allotted space must be very great, because they must be thinned out so as finally to stand one foot asunder at the least.—Transplanting, therefore, should be practiced, and that, too, as soon as the young plants have become three or four inches high, and begin to crowd each other. The operation effects two or three good objects. It causes the roots to produce a number of short fibres, or, as it is termed, to become "stocky;" it dwarfs the plants, and while making them strong and compact, secures them to the soil; and it enables the grower to protect those left in the seed-bed (as some always should be) by covering of mats thrown over arches, formed of hoops or pliable rods, in the event of very severe weather.

In transplanting, let the bed or plot be a good firm loam, if possible, pretty well manured, thoroughly digged, and in a free, open situation. Select strong plants of nearly equal growth, and insert them in rows by means of a dibble or trowel, fixing each firmly in the soil, eighteen inches apart *every way*, if the variety be a free grower; but the small Yorks will do very well if the rows be that distance apart, the plants standing only twelve inches asunder in the lines or ranks. It is indispensable that the soil be brought closely to the roots; and made to press them firmly in every part; and should the weather be dry, much time will be gained by making the holes so deep as to receive the plant to the full length of the stem of each, and filling every hole brimful of soft water: then, by pressing the soil laterally and on every side with the tool, the roots will become puddled in, and secured at once. The period for the work must depend upon the growth in the seed-bed; and if the season be early, and the weather warm and showery, the transplanted cabbages may grow so rapidly as to require the check of a second removal, or at least to be raised up and re-set; but in general, and under ordinary circumstances, it will be sufficient to leave them undisturbed, as then the crop will be ready for culture at a more early period of the spring. In the south, it is no uncommon circumstance to cut fine-hearted cabbages in April, and very good ones in May. In the north, the growth must be more tardy in most situations.

The *seed-bed* will require care and attention. I have said that some plants ought to be left in it; and I urge the practice, because, in severe winters, the entire crop is sometimes cut off. The seedlings remaining, ought however, to be raised up; the longest roots cut back nearly one-third, and the plants be re-set in regular order and distance. Thus, supposing that 200 plants remain in it, and be made to stand four inches apart in rows which are six inches asunder, a bed little more than twelve feet long and about three feet wide, including its edges, will contain this valuable stock, which in severe weather, could be covered by three or four garden mats, and thus secure a pretty ample supply of plants for the spring. Another precaution may always be resorted to. In transplanting, deep drills or grooves can be formed by the hoe or spade, and along these the plants may be set so deep, that the lowest leaves may stand just above the soil. I adopted a still more efficient plan of security last October, though I do not recommend it because I think the growth in the early spring months is thereby retarded. Having a piece of ground set up in ridges, nine inches high, and the time pressing, I planted my young cabbages in the bottom of the trenches between the ridges. On three occasions the thermometer fell twenty-two degrees below the freezing point, and not a plant has been touched, though no covering was applied at any period of the winter. My broccoli, also, has stood in perfect security, in consequence of the stems being lower than the level of the edges of trenches made expressly for them. However, as cabbages ought to be hoed freely in the autumn, and the spaces between the rows digged once or twice, as soon as the plants resume growth

* There must surely be some error in this statement, of an acre of cabbage being able to fatten nearly three beasts of from 40 to 50 stones each: 100 lbs., of cabbage in twelve hours, that is the average number of hours of day-light in each day, for twenty weeks from the end of October, will amount only to tons 5 cwt. Now a middle-sized ox will, in that time consume 30 tons of Swedish turnips. Do 6 tons 5 cwt. of cabbage yield as much nutriment as 30 tons of Swedish turnips?—Ed.

in the early spring, it is evident that the ridges present an obstacle to these important operations. If the winter prove mild, the cabbages will progress in some degree; but if by cold they be rendered torpid, they will start into growth with the early return of solar influence: a few may fly up to seed but the greater part will form hearts, and can be cut in succession. In cutting, it will be prudent never to take off the green and healthy leaves, those that are inert and yellow, will scale off of themselves, or with the slightest effort: but the green and firm ones have still an important office to perform, in perfecting the auxiliary buds which produce young sprouts. These secondary cabbages, or "greens," affect an open growth, and in themselves furnish a delicious vegetable; but they may—that is a portion of the best formed among them—be devoted to another purpose of considerable utility in garden economy. The shoots when about five or six inches long, are to be gently twisted off from the stem, and the lacerated heel of each being trimmed perfectly even and smooth with a very sharp knife, but not shortened; the young plant thus rendered a cutting is to be very carefully planted in lightish, sandy, fresh moved loam, so deeply as nearly, but not quite, to include the entire stem. The setting-stick or dibble is to be thrust diagonally into the ground in three or four places, in the direction of the heel, so as to fix it firmly in the soil, and then a little water should be given to each plant to wash the earth closely about the stem. Detached shoots so treated, will frequently produce roots speedily, and bring a supply of excellent secondary cabbages, true to the original varieties: *seeds* are apt to sprout, owing to cross impregnations.

To sum up the chief points of cabbage-culture for spring and summer main crops, it must be observed that the *period of sowing* should be strictly attended to: the *seed-beds* are to be slightly hoed to keep the ranks clear of weeds; the stronger plants are to be timely removed to the final beds, where in two autumnal hoeings and a moderate earthing up must be given during the progress of growth. On the approach of spring the intermediate spaces are to be digged or forked, after the removal of the inert leaves, and the operation should be repeated when the plants evince the tendency to fold up their inner leaves for hearting. By a careful attention to these needful processes, a bed of fine cabbages will, in favorable seasons, be secured. Having thus dwelt so minutely upon the routine culture of the cabbage for the main spring and summer supply, I shall only allude to that part of the treatment of succession crops, which refers to the summer and autumnal months.

It is usual to give directions for sowing the seed at several distant periods; but my object is to obviate trouble, and to simplify operations as much as possible; and as I have proved that, by attentive management, a regular supply of fine plants may be obtained from one extra sowing, I shall presume that an extensive seed-bed or plot exists, having been prepared late in March or early in April. The mode of culture will be understood by the directions already given: what, therefore, remains to be said will apply to the order of routine which ought to be observed subsequent to the *first of June*. At that time we may suppose that the greater part of the cabbages have been cut, the stems remaining being left for the production of sprouts. The seedlings of the April bed that are in a state to be transplanted, should be carefully selected, and set in a bed of rich soil, watered, and attended to in every respect as were those of the spring crop. This first bed, with the cuttings of the sprouts and the other shoots yielded by the old stems, will produce an ample supply of a second crop during July and August.

After the removal of the seeding plants, those which remain in the seed-bed should be greatly lifted and replaced, but at regular distances three or four inches apart; the ground should be moved, cleared of weeds, made level, and well watered if the soil be in a dry state. Should the plants be very numerous, a hundred or two of the best might with great advantage, be moved to a succession bed to stand in rows, six inches apart, plant from plant. Thus they will acquire stocky roots, and be checked for a time; while the seedlings will gain strength from the additional space afforded them.—If a bed be formed and planted for cabbaging in June, and thence every two months; and especially if—as I must presume—a previous transplantation had already been made during May, it is obvious that a succession of crops will be secured during every favorable season till the end of October; and I may add, from positive experience, that if the weather be then fine, and the succeeding winter prove open and mild ("a green yule,") any remaining stock in the seed-bed, however long shanked and ungainly they may be, if set deep in the soil of a well prepared bed, may make good progress to the end of November, survive the winter, and produce excellently hearted and sweet-tasted cabbages in April. Small they will be, and some perhaps will fly to seed; but those which do succeed, will amply reward the attentive care of the grower. My experience applies, of course, to the latitude of London, though in a county far westward, and much later in its productions; but I presume that in the north also these hints may be rendered to a certain extent available.

2. *The Savoy, Brssica Oleracea Bullata* of De Candolle—a variety distinguished from all other hearting cabbages by the puckerings of its leaves. It is one of the prime winter vegetables, and well merits the attention of every one who has a garden or kail-yard. There are three subvarieties—the large yellow, the green, and the smallest *green*, which is the hardest of the three.

The savoy must be sown pretty early in the spring, and therefore I say nothing now of the early processes of its culture; but as it will require transplanting to plots where it is finally to remain, it will be needful to observe, that, as in all respects the intermediate culture will, as nearly as possible resemble that of spring sown cabbage, the directions above given will apply to it. In England it is customary to transplant at two or three periods of July for the winter supply; but it will be proper to commence the work earlier in the north, and to finish by the middle of that month. The ground should be well digged and pulverized; the texture rather light, and the quality rich.—Draw drills or shallow trenches about thirty inches apart; tread along the drills or press them with a broad pole, till the soil become smooth and compact; then plant the savoys eighteen inches asunder, filling the holes with water, and fixing the roots firmly in the soil. After they have become established, and begin to grow, the spaces will require the hoeings and diggings which are so ensential to the progress of plants of all the cabbage family, and have been before alluded to. As winter approaches, the earth ought to be brought up to and about the stems.

The planting in open, manured trenches in *dry* weather will not only secure the growth of the plants, but greatly tend to protect them from frosts during winter.—*Savoys* are not considered to be imperfection, till they have been exposed to a degree of frost; and they will subsequently furnish the table throughout the winter months.

3. *Broccoli.*—This variety of the cabbage tribe is divided into a number of subvarieties, all of which are excellent furniture for the garden. By Professor de Candolle it is placed in the sixth division of his arrangement, *Botrytis* (*Brassica botrytis,*) *i. e.* resembling a bunch or cluster of grapes, but this grape-like species of variety admits of another sub variety, as No. 1 is the cauliflower, *Cauliflora*, or flowering cabbage; But No. 2 is the broccoli, and is designated as *Asparagoides*, or asparagus-like cabbage. Though the similitude of broccoli, to asparagus may appear somewhat fanciful; yet as precision of classification is obtained, it will be perceived that it is far better to enter into minutiæ closely, than to presist in a mode of arrangement which is equally ill-defined and undiscriminating.

This delicious vegetable is perhaps without its rival in the garden, and its culture is very simple; it is too late, however, in the season to raise it from seed, and therefore I defer to enter upon a regular detail till the spring of next year. I have, however, raised some of the finest *Portsmouth* cream-colored, from seeds sown after the 10th of June, which produced compact and exceedingly large heads in the following April or May: it may therefore be worth while to try a small sowing as early as possible in June, following the directions, in as far as concerns, the mode of preparing the soil, &c. which are given under the article cabbage, and transplanting into manured trenches, six inches deep, and ten or twelve inches wide, not later, if possible, than the third week of August. In the event of frosts, before November, no time should be lost to bring the earth that was thrown out and lay as a ridge on each side of those trenches, to the stems of the plants, as is done in earthing celery.

But if we may trust some modern writers of new discoveries, *broccoli may* be propagated by slips, with the most successful results. Every one ought to try the method who has in his garden the stems of plants, the heads of which having been cut show a tendency to protrude sprouts. In *the middle of June*, says a writer, whose article is now before me, (or for Scotland, says *as early as possible in June.*) "I slipped off a quantity of the side shoots, and planted them. I had them well watered, and well secured in the soil. They struck root in a very short time, and made strong plants which produced heads of a fine size at the usual season." "I am persuaded the plan is well deserving attention, not only with broccoli of the same kind I have cultivated (*late flowering purple*) but with many other kinds; thus an excellent variety might be perpetuated without the risk consequent upon seed."

I have not myself had an opportunity of experimenting upon this vegetable, since I saw the article quoted from, but have reason to believe the plan has been proved to be feasible; in fact, there is nothing in the analogy of the species with its type, which is unfavorable to the operation.

4. *Peas.*—At this season of the year it may appear almost too late to speak of the cultivation of the pea; but I am inclined to notice it for a reason which will be shortly explained.

The *garden-pea*, of which there are many varieties, is found in the fourth tribe, *Viciæ* (that is among the vetches) of the great subordor *Papilionaceæ* of the natural order *Leguminosæ*, and in the 17th Class 4th Order of the Linnean System, *Diadelphia, Decandria*. Every one is aware of the peculiar shape assumed by the blossoms of plants of the pea tribe; which, it is evident, can readily be made to constitute the type of a very natural class, in which most of our esteemed leguminous or pulse-bearing vegetables are to be found.

At some future day, I intend to enter at large upon the characters of all the favorite peas for table use; but on the present occasion I only alluded to one, which is a great acquisition, and of very recent introduction, the early white *Warwick*. It is adapted to field, as well as garden culture, is moderately prolific, hardy, extremely early, rapid in its course of growth, soon off the ground, and of a high peculiar flavor, that to some persons is extremely agreeable, though others do not affect it.

The seed, two years since, was dear, its price is now reduced; and it is stated that three crops may be produced on the same land, and leave it open for wheat. This, however, I have not seen proved: but having grown the pea, I can recommend it to every one who wishes a rapid grower. A crop sown in a long drill very early in June, may be succeeded by another in July, with every prospects of success. If the ground be dry, from a continuance of hot weather, the best method to ensure a vigorous plant is to dig a moderately broad trench, to saturate the soil at the bottom with water, to return the earth into the trench, and make that very wet; then, after covering the earth with mats, or green boughs for a day, just to permit the earth to settle, and so far to drain itself as to become in a workable condition, to strike a drill three inches deep, to sow the seed along it pretty thickly, but not in the crowded state too frequently seen; water should then be poured from the spout of a pot over peas, and the loose earth returned upon the seeds, and pressed or trodden firmly over them. One liberal preparatory watering thus given, is of more avail than fifty subsequent sprinklings. *Mildew* so common on the plant of autumnal crops, is, as Mr. Knight truly observes, obviated. He has had perfectly fine peas on his table in October, and it is certain that where disease can be prevented, peas in that season are a delicacy of the first rate excellence.—The Warwick, I think, promises to prove a valuable species for the purpose of a late crop, because the course of its entire culture is more rapid than that of the "frame" or early Charlton pea. When the plants rise above the soil one inch, the earth near the roots ought to be loosened by the thrust hoe. Another hoeing must be given when the plants are three inches high; and then, after drawing the lightened earth to the stems, to the height of an inch and a half, as a ridge on each side, branching sticks a yard high are to be applied. Nothing favors pea culture more than judicious sticking; the plants are brought to the light, are supported, and at the same time protected. *Mildew* is the bane of autumnal crops: it seems to be promoted by a draughty state of soil, high solar heat during the day, and cold dews at night: rapidity of growth produced by a deep moist bed, procured by preparatory and *profuse* waterings, appears to be the only effectual security from this fungus.

While on a visit to a neighbor some evenings since, he showed us a part of his corn field which had formerly been a celery bed, on which he assured us the corn grew more luxuriantly and withstood the drought better than any other part of the field, although every part of it was manured and ploughed alike. He ascribed, and as we thought with great propriety, the difference to the circumstance that the peculiar spot had been deeply penetrated with the spade in its preparation for the celery, and allowed the roots of the corn a better opportunity to search for food beyond the influence of the parching sun. This fact would seem to plead much in favor of the deep ploughing, and we hope the hint will be improved upon the ensuing season. We have ever been its advocate, and we have been so from a conviction of the common sense that was about the argument which presented itself to our mind in favor of the practice.—[Farmer and Gardner.]

Horticultural Society.—The ordinary meeting was held yesterday afternoon, at its rooms, in Regent street, Mr. Bostock in the chair, when Lady Cavendish, Gen. Blackford, and Major Willock were admitted members, and Lady Augusta Gordon was ballotted for and elected. Dr. Lindley announced the receipt of several presents, after which he described the various articles for exhibition in the room. Amongst these he stated that the dahlias were less interesting than in general at this season of the year, owing to the late rains, by which the eyes were so fully formed as to disfigure the flowers. From Mr. Errington, gardener to Mr. Hodgson, of Clarence Lodge, there was exhibited a melon, weighing upwards of 20 lbs., which was considered to be the same variety as that sold to the lower orders of the French population, and called the Paris rock melon. From Messrs. Colley and Hill, was exhibited a box of figs, produced from a tree 49 years old, and from the Rev. Mr. Cobbold, a dish of apples, preserved in saw dust since the autumn of last year. Amongst the flowers was a new species of *mesma*, producing more than 50 spikes, or racines, of 20 inches long, the plant extending over an area of 300 square feet of glass, from Mr. Perkins, and a specimen of *Bignonica grandiflora* from Mrs. Marryatt. There were exhibited from Mr. Rowlands, of Chester, some specimens of wire of a very pliable description, useful in tying up plants, and from the Hon Mr. Strangways, an interesting collection of flowers. The specimens from the gardens were not very numerous, but included a melon grown in water, according to the cultivation of this fruit in Cashmere, and which had proved tolerably successful, notwithstanding the abundance of foliage that had been produced. A silver Knightian medal was awarded to Mr. Davis, gardener to Lady Clark, for some specimens of grape and pine apples, and another to Messrs. Colley and Hill, for their specimens of figs, a Banksian medal being also given to the Rev. Mr. Cobbold, for his mode of preserving apples.—(True Sun.)

Rat Stopper.—A friend at our elbow wishes us to mention a method of stopping out rats from cellars. He was troubled with rats in his cellar. The *varmints* dug down on the outside and came in under the cellar wall. In order to put a stop to this business of their's, he carefully dug down and deposited a goodly lot of blacksmith's cinders, in such a manner that their *ratships* would have to dig or gnaw through it in order to get in.

They have since disappeared—probably giving up the scratch as hardly worth the wear and tear of *teeth* and *toe-nails*.—[Maine Farmer.]

Anthracite coal ashes will also do very well.—[Eds. N. Y. Farmer.]

We learn from the Washingtonian that it is in contemplation to establish, in the heart of the city of Washington, a cotton factory that will be unsurpassed in the Union for extent of usefulness. The extensive building of Mr. Wm. J. Stone, on the corner of 11th street and Pennsylvania Avenue, is proposed to be used for the purpose.—[Richmond Compiler.]

A letter from Lille, (France,) says: The number of factories of beet sugar which have sprung up in the environs of this city within two or three years, is truly unconceivable: thirty are counted within the distance of two or three leagues; the other arrondissements are in nearly the same state. In consequence of this state of things, the price of good land has risen from 3500 to 5500 franes the hectare; and rent in a still greater proportion.

Preserving Potatoes.—Chance has led to the discovery of a methed of preserving potatoes, which is both simple and attended with little or no expense. A housekeeper had placed in his cellar a quantity of charcoal. Having removed it in the autumn, without removing the dust that covered the grouud, he caused a large quantity of potatoes to be laid on it. Towards the spring these roots were preserved, had thrown out new shoots, and were found as fresh and well flavored as new.

The following article was, by mistake, omitted in the October No. of the Farmer, where it should have appeared.

Exhibition of Dahlias.—The unpropitious weather of yesterday prevented many from attending the exhibition—still open, however—at the *New-York Lyceum*, in Broadway, near Prince-street, which the New-York Horticuitural Society present this year to their fellow citizens.

A hurried visit by one who himself understands the arts and the delights of horticulture, enabled him to furnish for publication the following memoranda.

The tables, exceeding 200 feet in length, were literally covered with these brilliant flowers, arranged in six lines, and constituting, as will readily be imagined, a most splendid *coup d'ail*, embracing probably as many varieties as our country possesses. It was remarked, and the fact is exceedingly encouraging to our horticulturists, that the *seedlings* were uniformly superior to the best foreign flowers.

Among the most striking specimens were those contributed by

William Russell, three superb seedlings.

William Reid, six fine seedlings, one of which the *American*.

Levit Howe, a beautiful seedling Salmon delicately tinged with yellow.

John Morgan, fine seedliegs.

Alexander Walsh, Lansingburg, the *Daniel Webster*, a beautiful seedling.

Andrew Hyslop, fine seedlings.

Messrs. Hogg, very superior foreign Dahlias, Rose d'amour, Lady Hardwick, &c.

Noe & Ball, fine foreign Dahlias, Empress Josephine, Amanda, &c.

Mr. W. Clinchy, foreign, Bride of Abydos, &c.

Messrs. Thorburn & Neal, always great in the flower mart, presented many splendid Dahlias.

Mr. Knevell, Newburgh, Rose Apple, and a fine basket of Strawberries.

Mr. Wm. Rae, Newburgh, a plate of double yellow Plums, and three fine sample Grapes.

Mr. C. Ludlow, Newburgh, superior Sickle, and Vergaloo Pears.

Dr. Cockroft, New-York, fine specimens Roman Apricot.

A *Sago Palm*, in flower, attracted general notice and admiration.—[American.]

From the Family Magazine.

CURIOUS DISCOVERY.

In 1834, a subterranean Indian village was discovered in Nacooche valley, Georgia, by gold miners, whilst excavating a canal for the purpose of washing gold. The depth to which it is covered varies from seven to nine feet; some of the houses are imbedded in a stratum of rich aurifferous gravel. They are thirty-four in number, built of logs from six to ten inches in diameter, and from ten to twelve feet in length. The walls are from three to six feet in height, forming a continuous line or street of three hundred feet. The logs are hewed and notched as at the present day. The land beneath which they were found, was covered, at its first settlement by the whites, with a heavy growth of timber, denoting the great antiquity of those buildings, and the powerful cause which submerged them. Cane baskets and fragments of earthenware were found in the rooms. The houses are situated from fifty to one hundred yards from the principal channel of the creek. A great number of curious specimens of workmanship have been found in situations which preclude the possibility of their having been moved for more than a thousand years; among these, a half a crucible, of capacity of nearly a gallon, ten feet below the surface, and immediately below a large oak tree, which measured five feet in diameter, and must have been four or five hundred years old. The soil is diluvial, or what may be termed table land. The stratum of quartz gravel in which the vessel was imbedded, is about two feet in thickness, resting on decomposed chlorit. It is not difficult to account for the deposite of those substances in an alluvial soil, for the hills are generally very high and precipitous, and from the immense quantity of rain which falls, the streams are swollen to great height, sweeping every thing with them, and frequently forming a deposite of several feet in thickness in a season. A vessel resembling a double mortar was found in Duke's Creek, about five inches in diameter, and the excavation on each side nearly an inch in depth, basin-like, and perfectly polished. It was made of quartz, which had been semi transparent, but had become stained with the iron which abounds in quantity in all the country. In the bottom of each basin was a small depression, half an inch in depth, and about the same in diameter. What its use could have been, is difficult to conjecture. The high finish, and its exact dimensions, induce the belief that it is the production of a more civilized people than the present race of Indians.

INTERCOURSE BETWEEN ENGLAND AND AMERICA.

A trip from the Land of "Jonathan" to that of "John Bull" can soon be made in about ten days. The last New-York Albion contains an account of what is called the "British and American intercourse Company," a company established with a capital of 2,000,000*l*., under a charter authorising them to buy or charter Steamboats—to run locomotive carriages—to purchase lands to make railroads, &c. A harbor has been selected on the west coast of Ireland the best adapted for commercial intercourse between the United Kingdom and the United States. This coast is by many degrees the portion of Europe nearest to America, and is allowed by nautical men to be more accessible. It is the natural point of arrival and departure between the Old and New Hemispheres, because it avoids all the dangers and difficult navigation of the entire channel coast, on which the loss in shipping and manufactures has been proved before the House of Commons to exceed the sum of 2,000,000*l*. per annum. By the aid of a railway from the landing place to Dublin, and another from Liverpool to London the communication with the "Great Metropolis" of England will be completed in 28 hours after reaching the Irish coast. The voyage from New-York to the proposed landing place, it is estimated can be performed in about ten days, and the return voyage in about thirteen.

The cost of steam vessels, Railroads, wharves, docks, &c., is estimated at 2,000,000*l*—the annual outgoings 443,700*l*—the receipts 790,250*l*. Outgoings deducted, leaves 246,550*l*. This calculation is founded on the traffic as it now actually exists, without reference to the increase which must result, from the additional facilities of communication. Among the patrons and promoters of this magnificent project, are mentioned the names of the Marquis of Lansdowne—Lord Downes—the Marquis of Conyngham; Viscount Lorton, and the Lord Lieutenant of Ireland. The shares are 50*l*. each. Proprietors of five shares entitled to a free passage between Liverpool and Dublin; proprietors of fifteen shares to a free passage on the Railroad; proprietors of thirty shares to a free passage in the Company's vessels between New-York and the Irish coast.

BOTANICAL SOCIETY OF LONDON.—A number of botanists, amateurs, &c. have recently held several meetings at the Crown and Anchor Tavern Strand, for the purpose of forming themselves into a Society, bearing the above title. One striking feature of this Society is, that ladies will be admitted members; this we think highly deserving of commendation, as many ladies are not only excellent botanists, but they can generally devote a considerable portion of their time daily to practical botany. Among the leading objects the Society propose, are the following:—The advancement of botanical science in general; the particular cultivation of descriptive and systematic botany; the formation of a library, herbarium, and museum; the reading of original papers, extracts, and translations; the exchange of specimens with other societies or individual collectors; and every other available means that may promote the objects of the Society. It is further intended, that the Society shall consist of the following classes of members, viz.: resident, corresponding, honorary, and life members. We are glad to find, among the mighty mass of bricks and mortar, ladies and gentlemen so ardently devoted to so healthy and endearing a pursuit as botany. We shall be happy to hear of their complete success.

CARRIAGE SPEED REGULATOR.—An ingenious plan has been formed to stop waggons, coaches, and other carriages, which may have been run away with by horses. It is simply to apply the governor used to steam engines, so as to bring the break into operation.

PORCELAIN COLORS.—The pink color which ornaments the English porcelain has been hitherto unknown in France, and when required in that country was always bought here. M. Mallagutti, of the manufactory of Sevres, has analysed this color, till he is now able to compose it. In the course of his experiments he discovered another color similar to crimson lake, which is much more durable than any derived from the animal kingdom, and which may be advantageously employed in oil painting.

THE METEOROLOGICAL SOCIETY OF LONDON is about to be revived, after having lain dormant for several years, not from the lack of pecuniary means to carry into effect the objects of the Society, (as nearly 100*l* have been invested in the Three per Cent Consols,) but from a want of that union of purpose, and harmony of operation which ought to characterize every public body. A portion of the above fund is to be devoted to two prizes of 50*l* and 25*l* respectively, for the first and second essays on a given meteorological subject. A meeting of the present members will be called, by public advertisement, in a very short time, when gentlemen friendly to meteorological science will do well to become members without delay. Dr. Birkbeck is the President of the Society; Dr. Clutterbuck, Professor Daniells (King's College,) Dr. Shearman, and many other scientific men, are among the members.—[London Mechanics' Magazine.]

We lay before our readers the proceedings of the British Scientific Association, convinced that they will be perused with no ordinary interest.

The account of the Clifton Suspension Bridge will be carefully considered as we are now about to make a similar attempt.

The experiments of Mr. Cross have *electrified* the Scientific world. His discoveries are moved abroad with an activity that designates them as the most curious of modern times.

The results of the labors of this Association are pregnant with instruction to us and our Lyceums. We shall dwell upon this on another occasion.

BRITISH SCIENTIFIC ASSOCIATION.

CLIFTON SUSPENSION BRIDGE.—Assoon as the time for holding the meeting of the Association was definitively fixed, the Trustees and Committee for building this bridge determined to take advantage of so great and interesting an occasion to lay the first stone of this structure, and this (Saturday) was the day chosen for the ceremony. On account of the tide it was necessary to appoint so early an hour as eight o'clock. In the absence of the Marquis of Lansdowne, the President of the Association, the Marquis of Northampton, who had officiated for that nobleman, during the meeting, consented to lay this stone. The morning was brilliant, and at six o'clock persons began to assemble on the rocks, and down from which any prospect of what was going on could be obtained. The ferry-boats were also put in requisition, and a fine harvest they must have had. It had been appointed that the Trustees and Committee, and those gentlemen who intended forming a part of the procession, should meet at the ferry-house on the Leigh-wood side at 8 o'clock; and tickets were issued for the purpose of admitting those gentlemen within the enclosure. The scene at half-past seven was very pleasing. There were a great number of steam-vessels in Cumberland-basin, and they all covered their ropes with colors of every kind. The gentlemen who intended to see the stone deposited now arrived very quickly, and a procession was immediately formed under the direction of Captain Claxton, who is certainly the most active man in Bristol, for we have seen him acting, and well too, as grand manager of almost every thing. The procession was formed in the following order, first—an immense number of flags, then a band of music, the Architect carrying the inscribed-plate, the trowel, and the mallet, after which the Trustees, the Committee, and the general friends of the present undertaking.—The Marquis of Northampton now approached in a carriage with six grays. As we ascended the steep hill the scene was most animated. On the opposite bank every window was filled, and an immense crowd lined the shore. On arriving at the entrance to the wood his Lordship descended from his carriage, and followed the architect Mr. Brunel, Jr., being close behind him.—From the trees in every direction were hung innumerable flags, belonging to the different ships in the harbor, and these continued until we came to an opening in the wood, which gave us a glimpse of such a sight as could no where else be seen. The beautiful down and rocks of Clifton were before us, and wherever a human being could stand that place was occupied. We here descended a long flight of steps, made sufficiently wide to carry four persons abreast, until we came to the stone itself. Around and above this were platforms and galleries, formed in so excellent a manner as to accommodate with comfort and safety all those who had obtained tickets of admission. We now had the full view of that which we had before only seen imperfectly. The height was such that we had a most expansive view, and so far as the eye could reach on either side, the ground, so far as was practicable, was covered by human beings, and we should think that all the respectable portion of the inhabitants graced the scene with their presence. The river was also covered with boats, the rowers being dressed in their regatta dresses. A number of coins, comprising every coin now circulated, from the double sovereign to the farthing, were deposited in an aperture made for them by the Noble Marquis.—His Lordship then placed the inscription-plate under the stone; on this stone the following were given as the dimensions of the bridge:—

Distance between the two points of suspension, - -	700 feet.
Length of suspended roadway,	630
Height of roadway, -	230
Total width of floor, -	34

His Lordship then covered this with mortar, and put the Act of Parliament for making the bridge, and a plate, being one of a breakfast set which Mr. Ivatt, of the Gloucester Hotel, had had manufactured for the public breakfast at his house this morning, having a representation of the bridge upon it, under the stone, which was then lowered to its ultimate place of destination. A trumpet was then blown, and the people on the Leigh-wood side gave three hearty cheers. The trumpet was blown again, and the cheers were responded from the opposite shore. A third blast, and the vessels below cheered. The Marquis then said, that it was his great pride and pleasure to come and lay the first stone of this magnificent edifice. In coming there he felt that the compliment had been paid not to him as an individual, but to the association of which he was now the humble representative, and he hoped the present moment would be the union of science and commerce. He would express a hope that that association might last as long as that edifice, and he trusted both would last to the end of the world. (Loud cheers.)—He would not conclude without proposing three cheers for Mr. Vick for his legacy; three cheers for Mr. Miles, for his gift of the stone; and three cheers for Mr. J. A. Gordon for his munificent donation. (Three cheers were given with great enthusiasm.) The procession then returned to Ivatt's Hotel, where a splendid breakfast was laid out, and where were met upwards of 300 friends to science, among whom we noticed the head of the association. Mr. Brunel did not cross the chasm on the iron bar as was anticipated, owing, as it was supposed, to the bar having been considerably twisted by its fall. A new bar is being made. Several votes of thanks were agreed to.

At the Meeting of the Association the same day, Professor Henslow and Mr. Davies Gilbert returned thanks to the various proprietors of manufactories who had so liberally thrown them open to the inspection of the members, the latter remarking that hitherto the prevalent and principal defect of such establishments was, that they were kept secret, whereas by the admission of men of science, he felt persuaded that suggestions would frequently be thrown out which might practically be acted upon with the best advantage. The Rev. Vernon Harcourt proposed, and Dr. Roget seconded, a resolution of thanks to the various distinguished foreigners who had honored the Association by their presence on this occasion. Baron Charles Dupin, of the Academie des Science, in acknowledging the above, expressed his gratification at that cordial feeling which existed between Great Britain and France in scientific objects. During the period of war with this country, whenever Sir Joseph Banks made an application to the French Government for the restoration of any man of science or Fellow of the Royal Society, he was always liberated. At the height of the war, likewise, the medal of the Royal Society had been voted to M. Malesherbes, one of his countrymen. He had paid a visit to Bristol about 18 years ago, and congratulated the meeting on the improvements which since that time had taken place, and in those efforts which she was the first to undertake of establishing a steam communication with America. The resolution was likewise acknowledged by Professor Hare, of Philadelphia, and Dr. Simon.—Various other resolutions were proposed, and after three cheers had been given to the President, the meeting adjourned.—[Times.]

BRISTOL, Aug. 24.—At an early hour this morning the number of members who had entered their names was 1,287, and which, from the advanced period of the week, may be considered nearly the total number of those who will visit the Association on the present occasion. The sectional rooms were all well attended, and several contributions of great interest were made. The interest to many of the ceremony of laying the foundation of the suspension bridge at Clifton, on Saturday, will be diminished by an unfortunate accident which occurred to the iron bar this morning. This gigantic rod had been safely drawn across the immense chasm over the river; but whilst the workmen were engaged in placing the end in its position, it fell down into the bed of the river, obstructing the passage, and the whole being so much bent as to render its restoration for the present almost impossible. This accident was occasioned by the rope which was attached to it being cut through and giving way, and in

its fall knocked dowh a scaffolding, by which one man was severely injured.

At the statistical section this morning, after a communication had been made by Mr. W. Creig on statistical desiderata, and on the deficiencies and errors of such reports in general, Dr. Lardner made some remarks on the effects of railroads in internal communications. The average of such as are in present operation, namely, Liverpool and Manchester, Newcastle and Hexham, and Dublin and Kingstown, showed an increase in the number of passengers of at least four to one. This great increase was to be attributed not so much to economy of expense, as of time and exemption from fatigue as was shown in one instance, in which the cost was actually greater than before. A coincidence was exhibited in the canal boats between Edinburgh and Glasgow, in which the speed attained was ten miles an hour, and the cost had been reduced to one quarter of that of other modes of conveyance, but in which, the journey lasting longer, the passengers were proportionably few. On the Liverpool and Manchester Railway the expence of conveyance to each passenger, in the supply and repair of engines, average one penny per mile, whilst an experienced engineer has made a contract for four years to supply and maintain the carriages on the London and Birmingham line for one farthing per mile for each passenger. On the line now in progress between this city and the metropolis it was proposed to employ three separate trains; that for heavy goods to proceed at night; one for the conveyance of mails and a select number of passengers, in which it was not impossible that a speed of 50 miles per hour might be maintained; and the third for ordinary conveyance, at a speed of about 30 miles. Dr. Lardner also mentioned a fact respecting the employment of railroads in America, that notwithstanding all the navigable resources of the Hudson, it was in contemplation to establish a line of railroad on the banks of that river. Mr. J. Taylor read a paper replete with interesting facts on the statistics of mining in England, and Europe generally.

The evening meeting held at the theatre, was equally well attended with that of the preceding Monday. The Rev. W. F. Coneybeare, V.P., was in the chair. A letter was read from Sir J. Hershell, addressed to Sir W. Hamilton, giving a detail of some of his observations on the nebulæ, since his arrival at the Cape of Good Hope, which communication was forwarded by him for the purpose of being read at the meeting. Since his arrival in the country he had discovered a large collection of nebulæ of all sorts, descriptions of which he had forwarded to Professor Schumacker for insertion in his annual Ephemeris. The general aspect of the southern region he described to be of a high degree of richness and brilliancy from Orion to Antinous, presenting a blaze of light, with, however, a few patches which were destitute of stars. It was impossible to view this zone with the surrounding stars without an impression that the milky way was but an *annulus*, and that our own system was placed in the most desolate part. The Magellanic clouds presented curious objects, appearing as if they differed from other celestial phenomena, in a different degree of condensation in the stars of which they were composed The great nebula in Orion was much more bright than when seen in our own latitudes, and the planetary nebulæ were numerous and highly characteristic, five of them being as sharply terminated as any planetary bodies, and it was not until after he had submitted one to many careful examinations that he was convinced it was not a new discovery. The clearness of the climate was shown by the fact that in 43 days there were only three in which Venus was not seen in broad daylight by an ordinary observer. Dr. Apjohn next read an abstract of the papers that had been read in the morning at the section for chemistry, one of which, by Professor Daubeny, on the nature and origin of thermal springs, elicited a considerable discussion, the former giving it as his opinion that they were always produced by latent or dormant volcanic action, and adducing the geological characteristics of those in this vicinity in support of the theory, and likewise advancing views respecting the productions of subterranean heat from chemical changes below the surface of the earth. In reply to these observations, and in support of the ordinarily received views of central heat, Professor Philips gave several instances of investigations recently made on the subject at various depths, and with instruments provided for the purpose by the Association. In a mine at Newcastle, 280 yards below the surface, the external atmosphere averaging 47½ deg., the thermometer stood at 64 deg., being an augmentation of nearly 1 deg., for every fifteen yards, a proportionate average which in a variety of other cases was almost the same. In a mine at Manchester, 337 yards below the surface, the external atmosphere being 49, the thermometer stood at 62; in a salt mine, 112 feet deep, 52 deg., whilst on the surface it was 47; and in a mine near Bristol, within the last few days, 170 yards below the surface, the external atmosphere being 42 deg. it stood at 64 deg. Mr. Taylor in support of these views, gave a recent instance of examination in a pit, 1,740 yards deep, in which the temperature was 97 deg. At the conclusion of the discussion, the arrangements for the ensuing day were announced and the meeting adjourned until Friday.

AUG. 25.—The varied engagements which have occupied the attention of the members throughout the whole of the week do not appear in the slightest degree to have weakened their interest, as was displayed in the continued full attendance at the sectional meetings this morning. In consequence of a contemplated botanical excursion to-morrow—one to Portshead in a steamer provided gratuitously for the occasion—this section prolonged its sitting this afternoon, and terminated its proceedings for the present session.

At the statistical section an interesting communication was made by Prof. Forbes on the relative height, weight, and strength of the Belgian, English, Scotch, and Irish nations, the comparison being the least favorable to the former, and the most so to the latter. The experiments from which these deductions were made were conducted from those made by Professor Queteler at the meeting of the Association in Cambridge, the average height of the Belgian was stated at 5 feet 7 $\frac{8}{10}$ inches; English, 5 feet 9 inches; Scotch, 5 feet 9 $\frac{3}{10}$ inches; and Irish, 5 feet 10 $\frac{1}{10}$ inches. [These proportions seems to us considerably exaggerated.] The strength of the Belgian was also less than that of the English by 50 lb.; in every case of experiment, 25 years being taken as the age of maturity. Baron C. Dupin whose name has so long been known in connection with English statistical inquiries, next exhibited two maps of this kingdom, in which the several counties were shaded according to the denstity of population and proportionate criminality. The deductions formed from his inquiries into the latter were as follows:—He calculated six different degrees of density of population to 1,000 acres.—Firstly, 100 inhabitants to 1,000 acres; secondly, 218; thirdly, 465; fourthly, 555; fifthly, 1,100; and sixthly, which is in highly populated counties, such as Middlesex, 7,000 inhabitants to the 1,000 acres. In the first district, the proportion of offenders to the population would be 1 to 2,963: in the second, 1 to 1,427; in the third, 1 to 593; in the fourth, 1 to 550; in the fifth, 1 to 498; and in the sixth, 1 to 558. In Ireland the same proportionate regularity did not exist, as there society was not in such a state as to allow the laws to be fully developed; and although the population was more condensed there was less crime in the north than in the south, owing to the more industrious habits, the greater degree of education, and comfort of the inhabitants. Some curious comparisons were next given of the relative ages, of criminals in England and France, in which the proportion of juvenile offenders was much greater in this country.—Some curious facts were also stated respecting *the relative proportion of crime in the sexes of different ages*, which exhibited the following ratio. Before the age of 12, the proportion of males to females was 1,869 to 1,000; from 12 to 16—1,600 to 1,000; 16 to 21—1,560 to 1,000; 20 to 30—1,623 to 1,000; 30 to 40—2,400 to 1,000; 40 to 50—2,712 to 1,000; and 50 to 60—2,822 to 1,000, whilst above that age again it became less, being 2,267 to 1,000. In the different degrees of crime, likewise, averages had been made which were in favor of the female sex, the number in proportion being 2,836, to 10,000; assaults, 2,204; manslaughter, 890; robbery on the person, 800; and robbery attended with violence, 511. *The influence of instruction on the mass of the people* he considered to be a term which was often misapplied, as when moral it could not but have a good effect, but if physical it was alike hurtful to the bad character, as it was beneficial to the good. Some curious returns were also made, exhibiting the proportion of criminals at different ages in this country and France; in Great Britain, this being greater in the juvenile and less in the

ages above maturity, which might be attributed to the operation of several causes.—Whilst in England a great proportion of the younger criminals were transported from the country to settlements where the majority remained for life, in France, after some years confinement and restriction, they were thrown again upon the community as professors of criminality. Another point was urged in favor of the morality of the youthful criminals of this country, though decidedly not so in favor of the parents, that many chi dren being sent out by them to pilfer when young, returned to habits of honest industry when their age placed them without their control. The various facts elicited showed that a very favorable change had taken place in the late improvements of the English Criminal Law, by which many penalties were altered, and that of death was in many instances taken away. The proportion of convictions to acquittals had also latterly been greater, which demonstrated that the laws were administered with more propriety and greater discrimination. Thanks were voted to Baron Dupin by acclamation for his information.

The Geological Section has, as usual, been an object of atttracion to-day. Much was expected from a paper of Mr. Fox, of Penzance, on the change of mineral substances by galvanic action, as results of long observation and experiment; and Mr. Fox produced an experiment, of materials coarsely put together but yesterday, in which, with sulphate of copper and sulphuric acid, he gave new characters to some lumps of metal by the galvanic arrangement. Dr. Buckland, the President, referred with exultation to Mr. Fox's apparatus, which consisted only of a blacking-pot, 1½d., a partition between the fluids of clay, and a pennyworth of sulphate of copper and sulphuric acid; and then, turning to a plain country person, he stated that he should now astonish the whole world by bringing forward the unparalled discovery made by him with a pail of water and a brick with a hole in it. He then handed to the table a Mr. Cross, a resident of the Quantock Hills, whose name is consecrated to future fame as the author of the greatest discoveries ever made in chemical and mineralogical science—discoveries which will create an entire revolution in the pursuits of science. Mr. Cross presented himself with evident embarrassment, and then stated that for many years he had been a devotee to experiments in electricity aud galvanism. That he had generated galvanic action in hundreds of different ways, and with all sorts of materials. That he now discarded acids from his combinations as rubbish, and, to use his own expression, produced his most perfect results and mutations of the products of nature, with the clean material of water, combined with sufficient lime. The multitude of his combinations, and the months and years in which he left them to work, his disappointments, and often their "spiteful results," formed a most diverting narrative. But when he described his production of regular crystals, his quartz which scratches glass, and his germs of various metals from powdered stones, the bursts of applause rent the air. Many distinguished men of science expressed their delight with acclamations, and the President was the most rapturous in his gesticulations. It appeared that his happiest creations are made in the dark, and that the action of light disturbed the delicate means by which nature works under ground. He also stated, as a general fact, that the intensity of all electrical action is a maximum, or high degree, from 7 to 10 in the morning, and at a minimum from 7 to 10 in the evening, the one ten times greater than the other. It would be tedious to follow honest Cross any farther, since, in a few days, large numbers of the Association propose to visit him, to see his apparatus and the results. The distance is 42 miles, but this will be no obstacle to hundreds now in Bristol. Professor Sedgwick, and a foreigner present who spoke English admirably, had, it appeared, visited Cross, and their accounts increased the interest of his narrative, and confirmed the veracity of his statements. Seventeen years ago, the Professor visited him, on a geological ramble, and found electrical apparatus of an extent and variety which filled him with astonishment. Many of the wires, etc., extended twenty miles in length, and the terror of his machinations in the neighborhood has been, for years, a security for rabbits, birds, game, etc. Cross's announcements have eclipsed all other business of the day in the other sections, though the same activity has prevailed in all of them. There were some fine experiments on Electric Magnetism in the Philosophical Section, but all past electricity sinks in interest before the new modes of generation, and the results, by Cross.

In addition to that from Liverpool, a deputation from Norwich is in the city, in order to invite the association to pay a visit to that place next year, and, to give strength to its appeals, is accompanied by a Prebendary, who brings with him the cordial wishes and sympathy of the Venerable Diocesan. This, along with the various other matters, will be decided on Monday night.

The iron bar across the Avon has to-day been replaced in its position, but has been so much twisted in its fall as to render the anticipated flight across the river scarcely possible. Among those present were Mr. S. Rice and his son.—[Chronicle.]

A meeting, which was very numerously attended by members of the Association, was held this morning at the Theatre of the Institution in Park street, T. Wyse, Esq., M. P., in the chair, for the purpose of forming an educational section, which, although not connected with the Association, should hold its meetings at the same time and place as the latter. Resolutions were passed in favor of the proposal, and observations made in furtherance of the objects by the Rev. Dr. L. Carpenter, Rev. E. Stanleys, Dr. Jerrard (the Principal of Bristol College,) Dr. Taylor, etc. The committee was also formed, and it was decided that the first meeting should be held in Liverpool on the Saturday preceding the commencement of the next meeting of the British Association in that town.

The following is a list of the various grants of money, etc., for the advancement of particular branches and objects of science, which were awarded on Saturday, as also of the various recommendations made by the several sectional committees, and approved by the committee of record:—

Section A.—Mathematical and Physical Science:—£50 for the discussion of observations on the tides, at the disposal of J. W. Lubbock, Esq.—£150 for observations on the tides in the port of Bristol, to Rev. Mr. Whewell.—£70 for the deduction of the constants of lunar notation, under the direction of Sir T. Brisbane, Dr. Robinson, and Mr. Bailey.—£30 for hourly observations of the barometer and lock bull hygrometer. Mr. S. Harris.—£100 for the establishment of meteorological observations on a uniform plan, and experiments on subterranean temperatures, under the direction of the Committee of last year, reduced to Rev. Professor Powell, W. S. Harris, Colonel Sykes, and Professor Phillips.—£50 for the procurement of data depending on very accurate measurements of points situate in two straight lines at right angles to each other, for the exact determination of the question of the permanence or variability of the relative level of land and sea. Committee—Messrs. Greenhough, Lubbock, Mackenzie, Whewell, Sedgwick, Stevenson, Robinson, Bayley, Griffith, Colly, Cubitt, Portlock, and De la Beche.—£100 for experimental observations of the form of wave, as influenced by the effect of winds, and the effect of the form of a canal, and the manner in which the wave is produced. J. Robinson, Esq., Secretary; R. S. Edin, and Mr. J. J. Russel.—£500 for reductions of the observations in the Histoire Celeste, and vol. 9 Acad. des Sciences, 1789 and 90. Messrs. Lubbock, Airey, Baily, and Dr. Robinson.—£100 for experiments on vitrification. Drs. Turner, Farraday and Rev. V. Harcout.—£80 for the construction of a rock salt lens. Sir D. Brewster.

Section B.—Chemical and Mineralogical Science:—£50 for researches on the speficic gravity of gasses. Drs. Henry, C. Henry, and Dalton.—£15 for researches on the components of atmospheric air, Dr. Dalton.—£30 for researches on the quantity of heat developed in combustion and other chemical combinations.—£24 13s. for the publication of tables of chemical constants. Professor Johnston.—£60 for researches on the strength of iron made with hot and cold blasts. Messrs. Fairbairn and Hodgkinson.

Section C.—Geology and Geography:—£20 for experiments on the quantity of mud suspended in the waters of

rivers. Rev. J. Yates, Messrs. De l. Beche, and G. Rennie.—£30 for specia researches on subterranean temperature and electricity. Mr. R. W. Fox.—£50 for researches on the nature and origin of peat mosses in Ireland. Col. Coleby.

SECTION D.—ZOOLOGY AND BOTANY:—£25 for experimental observations on the growth of plants under glass, and excluded from the air, according to the plans of Mr. Ward. Professor Henslow.

SECTION E.—MEDICINE:—£50, renewed grant to the committees appointed to investigate the subject of the anatomical relations of veins and absorbents.—£50 renewal of a grant to the committees appointed to investigate the subject of the motions and sounds of the heart.—£25 for researches into the chemical constitution of the secreting organs. Drs. Rogot, Hodgkins, and Turner, and G. O Rees, Esq.—£25 for investigations on the phisiological influence of cold on man and animals in the Artic regions. Mr. B. King.—£25 renewed grant for the investigation of the effects of prisons on the animal economy. Drs. Roupell and Hodgkin.—£25 renewed grant for the investigation of the pathology of the brain and nervous system. Drs. O'Beirne, Green, Macdonald, Messrs. R. Carmichael, Adams, and O'Smith.—£25 for the investigation of the phisiology of the spinal nerves. Drs. Harpey and Broughton, and E. Cock, Esq.

SECTION F.—STATISTICS:—£50 for inquiries into the actual state of schools in England, considered merely as to numerical analysis. Colonel Sykes, and Messrs. Hallam and Porter.

SECTION G.—MECHANICAL SCIENCE:—£50 for an analysis of the reports of the duty of steam-engines in Cornwall.—Messrs. J. Taylor, G. Rennie, and Cubitt.

REPORTS IN SCIENCE.—SECTION A.—Captain Sabine to communicate a continuation of his report on the magnetism of the earth.—Mr. Lubbock to report to the next meeting the result of the deliberations of a committee appointed to consider his proposition for the construction of a new empirical lunar table. The committee appointed being the Astronomer Royal, Professors Rigaud, Challis, and Sir W. Hamilton; F. W. Bailey, and J. W. Lubbock, Esqrs.

SECTION B.—Professor Johnston to report on the present state of knowledge of the chemical and physical properties of some peculiar bodies.

SECTION C.—J. Taylor, Esq., to report on the mineral riches of Great Britain and Ireland.

SECTION D.—Mr. Yarrell to report on the present state of knowledge of ichthyology.

SECTION E.—Rev. Mr. Taylor, of York, to report on the various methods of printing which have been proposed for the use of the blind.

RECOMMENDATIONS OF RESEARCHES, ETC.—SECTION A.—That Captain Sabine's magnetical observations on the west coast of Scotland form part of the next volume.—That application be made to the French Government for a copy of the best tide observations.

SECTION B.—That experiments be made on the effects of long continued heat upon different bodies.—That the various products escaping from the chimneys of foundries and manufactories be examined.

SECTION C.—That the attention of the members be called to the discovery of plants of any kind in the late rocks of any age, older than the coal formation.—[Times.]

BRITISH SCIENTIFIC ASSOCIATION.

BRISTOL, Aug. 29.—Although the majority of the members who have attended during the past week are now hurrying away from the scene of their activity, there were many remaining to-day to participate in the entertainments which had been got up expressly for them—the one being a grand horticultural show, provided by the Horticultural and Botanical Society; and the other a grand regatta, under the patronage of the mayor and corporation, in which the races continued from 11 o'clock in the morning until 7 in the evening. The former, which was of an interesting character, considering the time of year, was a very fashionable promenade, at which most of the botanical members were present; and the latter was made the opportunity of a grand gala day by the citizens at large. A steamer sailed this morning for Cornwall, with many geologists on board, who received an invitation from Sir. C. Lemon, Bart., to pass some time at his seat, which is in the vicinity of the places of meeting.

Foreign Intelligence.

It is with the most poignant regret, says the *Manchester Guardian*, that we announce the death of one of our fellow townsmen. Dr. Henry, whose name must be familiar to all our readers, died by his own hand yesterday, at his residence in Pendlebury, near this town. For some time past, we understand, he had been in a very indifferent state of health, and had occasionally labored under great nervous irratibility. His indisposition seems to have been considerably increased by the excitement consequent upon his attendance last week at the meeting of the British Scientific Association at Bristol, from which he returned with a considerable aggravation of the symptoms he had previously exhibited, and we understand that he suffered under an almost total privation of sleep, which appears to have finally overpowered his faculties. Yesterday (Friday) morning, about five o'clock, he left his bed and went into his dressing-room, and he was at length found in the private chapel, attached to his house, quite dead, having shot himself with a pistol, the report of which had not been heard by any of the family.—(Globe.)

Amongst the railways connected with the metropolis, the Birmingham, Bristol, and Thames Junction railroad is the only one that communicates directly with the western parts of London, branching off from the London and Birmingham railway, at about 5 miles N. W. of its terminus at Somer's Town. It will convey passengers and parcels by a direct and short cut to Kensington, Chelsea, Westminster, and all the West end. Also, to Lambett, Southwark, etc., whilst the heavy goods will be taken by barges to all the wharfs and warehouses on the Thames, from Chelsea to the London Docks, by means of the Kensington Canal, which has been purchased. The Act of Parliament is obtained, the direction is appointed and organised, the line of road is staked out, most of the lands purchased; and it is expected that such progress may be made in the works during the ensuing winter, as will enable the Directors to commence business simultaneously with the London and Birmingham, and Great Western Railway Companies. It is also proposed to apply to Parliament in the ensuing Session for an Act to extend the line of railway from the Hammersmith Road to Knightsbridge, near Hyde Park Corner, for which purpose surveys and estimates have been made, and the project has the concurrence of several of the principal proprietors on the line.—(Sun.)

M. de Gerstner, an engineer who recently visited England and Belgium with the view to study the iron railroad systems, he being charged to execute two lines of road from St. Petersburgh to the Royal Palaces in the environs, published on his return a report in four different languages to the number of 25,000 copies. He proposes to make an innovation in the construction of the steam-carriages, which consists in placing an apparatus in front of the engine, which will clear the rails in case they are obstructed by stones, snow, or ice.

At the works of R. Stephenson and Co., at Newcastle, there is now constructing a locomotive engine for the Emperor of Russia, for a railway six feet in width, and the wheels of which engine are six feet in diameter, and the speed is guaranteed to be 40 miles per hour. The engine is destined to travel between St. Petersburgh and the Emperor's country palace.—(Standard.)

A gentleman exhibited on Saturday a novel description of boat on the Serpentine. It consisted of oil cloth, and, upon being opened, assumed the form of a very beautiful boat. He crossed the water, and afterwards rowed up and down with astonishing rapidity.—(Herald.)

The subterranean passage for the Saint-Germain iron railroad under the village of the Batignolles, to the plain of Clichy, is complete, and the wagons now pass through it.

It is stated that a land proprietor of the province New Russia has sent, as a present to the Emperor Nicholas, an amethyst, found in the mines of Siberia, weighing 7 pouds, or 280 lbs. It is the largest that has ever been seen in Russia.

The great bell at Moscow, which has lain embedded in the earth for upwards of

a century, has been lately raised, repaired, and placed on a pedestal, after receiving a fresh benediction in the presence of an immense concourse of people. It was founded by order of the Empress Anna Joannowa, and is the largest in the world, its diameter being 23 feet, its height 21 feet, and its weight 12,000 Russian *pouds*, or 480,000 lbs. French.

We long since stated that a commission had been sent to England and Scotland with a view to examine the superiority of the iron cannon manufactured there over the brass ones at present used in the French service. The report was, we learn, favorable, but the Government have resolved not to determine the question until after a course of experiments made under the direction of a commission appointed for that purpose. They have invited the Swedes and English to the trial, with nine cannon of different dimensions cast after patterns sent from France. The Belgian Government having judged that Belgian iron would well bear the competition with that of England and Sweden, has also entered the field as a competitor, and several cannons cast at Liege have been sent to La Fere, where they are to be proved.

Much curiosity has been excited in Oxford by repeated trials of an invention intended to regulate the speed of carriages when descending a hill, by means of which the coachman can instantaneously or progressively lock both the hind wheels. The apparatus was applied to a four horse stage, which was loaded with passengers, and, on ascending and descending a hill, was found to answer all the purposes intended. The inventer then proposed that the coach should be taken down the hill without the horses, and it was frequently stopped while proceeding at the rate of twelve miles an hour. Many practical gendemen had ample proofs of the principle of the invention by having the coach lifted up, and the two hind wheels allowed to turn free on the axle, when it was found that a two-pound weight, placed on the extremity of the wheel, would gently bring it round, but when the first degree of retarding power was applied, it took a weight, so placed, of fifteen pounds to bring it gently round ; the second degree thirty-six pounds ; the third degree fifty-six pounds ; and the fourth degree three-quarters of a hundred ; but with this weight no one person was capable of moving either wheel on its axle. Mr. Pearson, organist, of this city, is the inventor.—(Oxford Herald.)

The annual meeting of the Polytechnic Society was held on Tuesday in the Great Hall, Falmouth. Valuable specimens, both of science and art, were exhibited at this meeting. Sir C. Lemon, the Member for the county, who had announced the day of the meeting at Bristol, and courteously offered hospitality to any of the members of the British Association, who might feel inclined to attend, he did not take the chair ; he insisted on that honor being bestowed on our revered fellow-townsman, Davies Gilbert, Esq., late President of the Royal Society. He also took the chair at the dinner, to which all the strangers in the town, and all the members of the learned societies in Edinburgh, Manchester, and London were invited. Amongst the visitors present we noticed Mr. Enys, of Popman Castle ; Rev. Messrs. Buckland, Mackie, Stanley, Macauley, Punnett, and Cox ; Col. Sykes ; Professor Powell, of Oxford ; Dr. Fowler, of Salisbury ; Mr. Delabeche (the illustrious geologist) ; Mr. Fox (whose discoveries by the action of the voltaic battery, created so intense an interest at Bristol); Messrs. Denton, Thackeray, Meadows, Hay, Maddock, Dickinson, Ellis, Doyle, Wilson, etc.—(Falmouth Herald.)

An eminent London firm of engineers has received orders for the execution of two steam-engines of 200 horse power, for the huge steam-vessel now building in Bristol for trans-Atlantic communication, and which, it is expected, will be completed in the course of the ensuing summer. That now executing at Liverpool for the same voyage will only contain one of 270 horse power.—(Herald.)

One of the last analyses of the celebrated chemist, Vauquelin, proved the existence of a considerable portion of iodine in silver ore. This excited the astonishment of the chemists and mineralogists, who had no notion of this mineral being imbedded in ore, though they believed that it came from Mexico. M. Arago has applied to some young Mexican officers, who have lately arrived in Paris, for information on the subject, and has learnt, more particularly from M. Yniestra, that it is a well known fact in Mexico that the mineral in question comes from the mine of Albarados, in the mountains called Cetto-Temerosa, and that iodine is also found connected with the ore of corbonated lead ; and, moreover, it has been discovered in two plants which grow far from the sea, namely in an aloe, called in that country *Sebila*, of the genus *Magrey*, and in a species of barilla, which grows in the floating islands of the fresh water lakes near Mexico, which the inhabitants eat as a salad.

M. d'Averat has announced to the Geographical society, that a French traveller is on the point of setting off to explore the antiquities of Mexico.

Extract of a letter from Boulogne, dated Aug. 31 :—"For the last month this town has been the scene of continual amusements, in consequence of the number of visitors who daily resort here from England by the General Steam Navigation Company's vessels, who have reduced their fares from London to Calais and this port to five and four shillings, and on board of which they are sure of meeting with every accommodation, and the greatest civility, a rather rare article for travellers. All the hotels and lodging-houses will reap a good harvest this season, as they are well filled, and many private families who have hitherto never let out an apartment have now up at their windows "*Des jolies appartements a louer.*" Balls and private musical parties, or *converzasiones*, are given every evening by the most fashionable residents. Those of Mr. Hamilton, the British Consul, have been very fully attended. We have twice or thrice a-week a sailing or rowing match between the 'young sparks' to Calais and back, which is rather a novel scene to the French inhabitants, as in this country they have no idea of regattas or rowing matches, aquatic sports not being their *forte*. The following is about the number of English over in France, viz :—

Paris, Versailles, St. Cloud, St. Germain, and environs	20,000 to 25,000
Boulogne-sur-Mer and environs	10,000 to 12,000
Calais, the Basse Ville, and environs	5,000 to 7,000
St. Omer, Cassel, and environs	1,300 to 1,700
Dunkerque, Bergues, and environs	1,500 to 2,000
Dieppe, Havre, Rouen, Caen, Tours, Marseilles, Bordeaux, etc.	6,000 to 7,000
Total about	54,500

Admitting that each person spends, on an average, 5s. per diem for board and lodging, etc., it would be £12,625, and the annual sum spent in this country by the English alone would be about £4,608,125. This does not include the number of Continental, tourists who pass annually through France to Italy, Switzerland, Germany, the Rhine, Belgium, and other parts, of which no official return is published.—(Post.)

ANTIQUITIES AND CURIOSITIES.—The collectors of relics will perhaps feel interested in the subjoined statement of the prices paid within the last few years for various objects of historical curiosty :—The *ivory-arm-chair*, presented by the city of Lubeck to Gustavus Vasa, was sold, in 1825, to the Swedish Chamberlain, M. Schmekel, for the sum of 58,000 florins.—The *prayer-book* used by King Charles I., when on the scaffold, was sold in London, in 1825, for 100 gnineas. The *coat* worn by Charles XII., at the battle of Pultawa, and which was preserved by Colonel Roson, who followed the King to Bender, was sold, in 1825, for the sum of 561,000 francs. A fragment of the coat worn by Louis XVI. at the alter, was announced in the catalogue of a sale in 1829, and would probably have fetched a very high price but it was withdrawn. The Abbe de Terean paid a very high price for *a pair of white satin shoes* which had belonged to Louis XIV. A *tooth* of Sir Isaac Newton was sold in 1816 for the sum of £730. The Nobleman by whom it was purchased had it set in a ring, which he constantly wears. Apropos of teeth, it may be mentioned, that at the time when the bodies of Heloisa and Abelard were removed to the Petit-Augustins, an English gentleman offered 100,000 francs for one of Heloisa's teeth. At the sale of the library of Dr. Soarman, at Stockholm, in 1820, the *skull* of Descartes sold for a considerable sum. Voltaire's *cane* was some time ago sold in Paris for 500 francs. An *old wig*, which had belonged to Kant, the German philosopher, was sold, after his death in 1804, for 200

francs. A *waistcoat* belonging to J. J. Rousseau was sold for 950 francs, and his metal watch for 500 francs. In 1822, Sterne's *wig* was sold at public auction in London, for 200 guineas. In 1825, the *two pens* employed in signing the Treaty of Amiens were sold for £500. The *hat* worn by Napoleon at the battle of Eylau was sold in Paris, in 1835, for 1,920 francs. It was put up for sale at 500 francs, and there were thirty two bidders. There was at Pezenas an *arm chair*, which is said to have belonged to Moliere, and to which tradition has given the name of the *Fauteuil a la Moliere*. Its form bears evidence of its antiquity. When Moliere was living at Pezenas, he was accustomed every Saturday afternoon to repair to the shop of a barber, named Gely. This shop was the resort of all the idlers and gossips of the town. There politics were discussed, and the *historiette* of the day repeated from mouth to mouth. The large wooden arm-chair above alluded to stood in one corner of the shop, and it was a sort of observatory to Moliere, who, when seated in it, attentively watched all that was passing around him. This old chair is now about to be sold in Paris, and will, no doubt, soon fill a place in some collection of curiosities.—(Court Journal.)

The following is the greatest experiment in Ballooning that we recollect.

Not much is to be gained by increasing the size of a balloon, but we are not among those who would discourage experiments in this line.

When skilfully conducted there must result some benefit to science.

THE STUPENDOUS BALLOON.

On no previous occasion in the annals of aerostation has public curiosity been so strongly excited as on that of the ascent of this "Great Leviathan of the Air," which took place yesterday afternoon from Vauxhall-gardens. Long before the doors were opened a large number of persons were in waiting for admission, while every avenue to the surrounding neighborhood poured forth its hundreds, anxious to catch a view of this unparalleled wonder. Of the size of this balloon our regular readers are already aware; but for the benefit of those who may not recollect it we reprint the following from the prospectus issued on the occasion:—"The balloon is 157 feet in circumference; and the extreme height of the whole, when inflated, and with the car attached, is 80 feet. It is formed of 2,000 yards of crimson and white silk, imported in a raw state from Italy expressly for the purpose. It contains 70,000 cubic feet of gas. As a matter of curiosity, it may be stated, that the inflated silk will sustain an atmospheric pressure of 20,433,600lbs., or 9,122 tons. The network which envelopes the silk is of hemp, and the car of basket-work; the grapple, or anchor, is of wrought iron, and will be attached to an elastic Indian rubber cord, from the factory of Mr. Sievier. This will prevent in a great measure, any sudden jerk in stopping the balloon in rough weather, whereby so many accidents have occurred." We may add, that the silk is exceedingly thick in the fabric, and wove in a peculiar manner. The gores are united by a cement of a nature so tenacious as to prevent all chance of separation. On the doors being thrown open, the balloon was found to be already one-half inflated, the process, from the extraordinary size of the machine, having commenced as early as ten o'clock. About two a sudden change took place in the weather, and from that hour until past four it rained incessantly; but the ardour of the lovers of aerostatics appeared to be nothing daunted by the untoward occurrence, for they flocked into the gardens regardless of the "pelting of the pitiless storm," many elegantly dressed women not even opening their parasols to shield them from the rain, for fear of obscuring their view of the balloon. By a little after two o'clock the balloon was nearly two-thirds filled, and raising its enormous crown, waving gracefully amidst the foilage of the surrounding trees, began to exhibit its extraordinary dimensions to the view of the spectators, who were loud and unanimous in their expressions of admiration at the magnificent spectacle which it presented. Shortly after four o'clock a favorable change appeared on the face of the heavens, at which time it became apparent the inflation was nearly completed, the balloon having assumed the form of an immense pear. About half-past four o'clock, the rain having subsided, preparations for the ascent were commenced; they however, occupied nearly two hours, the power of the balloon several times raising a large party of the L division of police, who had hold of the netting, from the ground, and notwithstanding near 30 half hundred weights were also attached by ropes to the stupendous machine. The inflation was under the direction of Mr. Hutchinson. The peculiarly heavy state of the atmosphere produced a weight of condensed air upon the surface of the balloon of nearly half a ton, but so excellently had every thing been arranged, and so highly rarified was the gas, that the balloon was sufficiently buoyant to have taken up 20 people.

At five o'clock a large party of the nobility and gentry were admitted by tickets within the arena, where the inflation took place. Among them were the Duke and Duchess of Beaufort, Lord Worcester, Sir W. Abdy, Col. Stanhope, Pembroke-house; Lord H. Chichester, Captain Phillips, Lord Graham, Mr. Cosby, Lord Coventry, Rear-Admiral Sir Tremayne Rodd, Mr. R. Trevor, Mr. J. J. Clarke, Mr. Rice, Captain Hall, Lord Palmerston, Lady Codrington, Eaton-square, and party; Count d'Orsay, Lord Sunderland, Lord George Lennox, Lady Pellew, Mr. Joseph Jennings, King-street, Portman-square; Mr. Collet, Capt. Beauford, Admiralty; Mr. Wrottesley, Blackheath; Mr. H. F. Downes, Muswell-hill; Viscount Exmouth, George-street, Pall-mall, Mrs. Groves, Hyde-Park-terrace, Cumberland-gate; Mrs. W. Snoxell, Earl and Countess of Charleville, Prince Lieven, Count Tobstoy, etc. Shortly afterwards the car, which on account of the weather had been stripped of its splendid purple velvet covering and gilded eagles' heads, was brought forward with only a covering of scarlet cloth, and attached to the ring to which the ropes of the netting had been previously fastened. Twenty-four bags of ballast, each weighing fourteen pounds, were put within it, as were also six carrier pigeons and a number of other articles. Notwithstanding some trifling delays, the work of inflation was complete by five, and preparations commenced for attaching the splendid car to the balloon; some further delay occurred in this part of the operations, owing to the shower which had fallen previously having caused the netting by which the car was suspended to the balloon to contract, so that there was considerable difficulty in making the car hang level; this, however, was at length effected, and the adventurous aeronauts, under the directions of Mr. Green, sen., the veteran aerial navigator, who on this occasion made his 221st voyage, proceeded to take their seats in the car. It was then found that there were more candidates for the passage than there were berths in the ship, and the selection of his fellow-voyagers was, as a matter of course, left to the discretion of the commander, who issued his orders for the following persons to come on board—namely, Mrs. Green, Mr. E. Gye and Mr. Hughes, jun., sons of the proprietors of the gardens, Captain Currie, the gentleman who had so frequently been the companion of the unfortunate Mrs. Graham, a gentleman a friend of Lord Coventry, whose name was understood to be Williams, Mr. Green, jun. and Mr. Holland, who had so earnestly solicited a passage, and offered to pay so liberally for the accommodation, that his application became irresistible, and he was consequently entered on the ship's books, and took his station on the deck. The full complement of eight able-bodied was thus made up, when a voice was heard, exclaiming in urgent but at the same time tuneful accents, "Take me: I will not be left behind:" when it was discovered that Miss Green was the supplicant who thus urged her petition. Some objections were urged by those who had already been admitted on board; but Mr. Green, on discovering that it was his favorite niece who was thus excluded, declared that "Mary Ann" should accompany him. This had nearly bred a mutiny in the ship, when the Hon. Col. Stanhope, who was on the ground, called out "Five to one on Mary Ann." This opportune declaration of opinion had the desired effect, and the lady was immediately admitted to the honour of the sitting, a place, though not without difficulty, being found for her. This point settled, all that remained to be done was to try the power of the machine to perform the task assigned to it, when it was discovered that so predominant was its buoyancy that had the car been capacious enough to have afforded the accommodation, the balloon would, with ease, have sustained the burthen of several additional passengers; and previous to its being loosened from the

ropes, by which it was apparently most reluctantly confined to our lower region, Mr. Green felt it prudent to permit a considerable quantity of gas to escape, and thus to reduce its power of ascension. All things thus prepared, the interest became intense; every spectator showed by his countenance the anxiety which he felt for the situation of the aeronauts. No praise can be too great for the coolness and presence of mind displayed by Mr. Green in this somewhat trying situation. He gave his directions in a manner which inspired the crew of his comparatively frail vessel with confidence in his management, and, as it were, anticipated their security from accidents and dangers. The ascent was most magnificent; directly the word was given to cast off the last rope by which the balloon was restrained, it shot with velocity from the earth, and mounted high in mid air, in the direction towards Tunbridge, shifting its course from east to south-east. The shouts of the multitude, and the clang of the instruments of the military band which was stationed in the grounds, accompanied its flight. The aeronauts waved their hats and flags, and continued rapidly to rise. A grander sight can hardly be conceived. At least from 6,000, to 7,000 persons were present in the Gardens, in defiance of colds and rheumatism. This is certainly the most surprising ascent of a balloon that ever took place, whether the dimensions of the machine, the number of persons ascending, or the excellent manner in which every thing was arranged, be considered. It is the largest machine of the kind that has ever been constructed, and the only one, with a single exception, in which more than two or three persons have ventured to elevate themselves *in nubibus* from *terra firma*. The balloon in which the Duke of Chartres and three other individuals (two of whom were brothers, named Roberts) ascended, on the 15th of July, 1784, from the Park of St. Cloud, measured 55½ feet in length, and 34 in diameter; but this balloon is 157 feet in circumference, and between 70 and 80 in perpendicular height. Had it not been for the extreme wet, there is every reason for believing the ascent would have taken place much earlier than it did, and that the balloon would have started at four, the hour fixed for the purpose, instead of a quarter-past six. The balloon, with its nine passengars, descended near Cliffe, in Kent, at half-past seven. Mr. E. Gye, with Mr. Holland, immediately proceeded to Gravesend in a cart, and having despatched a man to the spot where the machine lay, came up to town in a post-chaise without delay, leaving Mr. Green, with the other passengers, in charge of the balloon. On the outside of the gardens, long before the hour appointed in the bills for the ascent, an immense number, amounting, we should suppose, to 50,000 persons, had collected. Millbank, the bridges, the parks, and almost every elevated spot throughout the metropolis, from which a view of the balloon, on its rising from the earth, could be obtained, were crowded by persons anxious to witness the novel spectacle of so large a number of persons traversing the aerial regions in a bark so fragile as a wicker-work car. The inflation is said to have cost the proprietors £70, though before the ascent Mr. Green found it necessary to let at least a fourth of it escape. When fully inflated, this stupendous machine had a graceful and magnificent appearance, to which its gay colors and splendid car added not a little.—(Globe.)

Yesterday Vauxhall Gardens were thronged with company upon the occasion of another race taking place between two balloons, it being stated that Mr. and Mrs. Green would ascend in one, and Mr. and Mrs. W. Green in the other. It was calculated that between 4,000 and 5,000 persons were present; among whom were the Marquis Clanricarde, Lords Fitzclarence, Hill G. Lennox, etc.; the Hon. L. Stanhope, some gentlemen attached to the Turkish Embassy, and several foreigners of distinction. About the time of the ascent, the Marquis of Clanricarde intimated to Mr. Green his intention of accompanying him on his ærial voyage. His wishes were instantly complied with. At a quarter past six, the Noble Lord stepped into the car attached to the balloon, with Mr. Green, Mr. and Mrs. Green having previously taken their seats in the other. Every thing being prepared, the æronauts launched their respective baloons, which rose majestically in a perpendicular elevation, there being scarcely a breeze to propel them to either side. At a short distance from the earth they changed courses, one going to the east, the other towards the south. They then retrograded their motions and crossed each other; the effect produced an instantaneous shout of applause from the spectators on *terra firma*. In continuing to rise they again passed each other, moving very slowly; and fears, which happily were not realized, began to be entertained lest at that height they might come in collision. At their greatest elevation they took a southerly direction. Mr. C. Green, with the Marquis Clanricarde, descended at five minutes past seven, at about a mile on the London side of Farningham, in Kent; and arrived at Vauxhall Gardens at half past ten, where the Noble Marquis joined a party of friends who were waiting his return, and appeared highly delighted with his novel trip. Mr. W. Green and his wife, with the other balloon, alighted about three miles further from town, without any thing remarkable having occurred. Mrs. Graham, accompanied by Captain Currie, ascended about the same time from the inclosure at Sadler's Wells Theatre.—[Globe.]

There has recently been discovered at Chalons-sur-Saone, a sarcophagus of the middle ages, composed of a single block of very friable free-stone, hallowed out, and covered with a slab of artificial stone, compounded of chalk and sand. It contained the skeleton of a man who, when living, must have been above six feet English in height. The bones are in a good state of preservation. There were three pieces of coin, one of the empire, bearing the date of 106; the other, in silver, being a croisillon, the date of which has not been mentioned; and the third, in copper, the size of a liard, bearing on one side the head of Charlemagne, wearing a dentated crown, and surrounded by a legend, of which the letters C. M. D. are only legible. On the reverse is a knight holding a lance in his left hand, and a gauntlet in his right. The garden in which it was found adjoins the ancient abbey of San Pierre.

Dr. Arnott's New Stoves.—At a meeting of the Philosophical Society of Edinburgh, which took place lately, one of Dr. Arnott's new stoves was exhibited. It is an oblong box, about 3 feet long, 2 broad, and 2 deep, carefully made air tight on every side. A partition within divides it into two parts, apertures above and below enabling them to communicate with each other. An aperture is arranged for the free admission of air, and another for carrying on the smoke; an air tight door admits fuel. A stove made of earthenware, and placed on one side of the partition, contains all the fuel required, and the hot air circulates round and round the partition before it is eventually carried off by the small tubular chimney. An extensive surface of 32 square feet is thus presented to the air at a moderate elevation of temperature, about 212; and accordingly, scarcely any thing passes up the chimney which has not been almost entirely exhausted of its heat. This stove saves equally time, trouble, and fuel, and is quite free from the dust of a common fire.

Dr. Reid's System of Ventilation.—At the conclusion of the same meeting, the Society adjourned to a new apartment, constructed by Dr. Reid, illustrative of his arrangements for ventilation, &c. It is 32 feet long, and 18 broad, the floor being pierced with 50,000 apertures for the admission of air. A series of experiments have since been commenced in it, in one of which, intended to show the working of the flues, 100 individuals remained in it for upwards of an hour, the room having been alternately filled with warm and cold air, and partially charged with ether and nitrous oxide, at different times. The air was completely renewed by a slow and insensible current every five minutes, and the various changes so gradually induced, that it was impossible to tell when they commenced.—The plan is equally applicable to public buildings and private dwelling-houses, as well as to hospitals, churches, public assemblies, and all those places where, from a crowded apartment, the air becomes oppressive both from heat and noxious effluvia.—[Scotsman.]

Thames Tunnel.—A special meeting of the proprietors of this Company was held yesterday, at the City of London Tavern, B. Hawes, Esq. in the chair. The Chairman stated that he felt great pleasure in informing the meeting that the engineer had advanced 60 feet further under the river since the introduction of the new shield, making upwards of 700 feet in the whole. The success of the undertaking was placed beyond a doubt, as there was a good hard ground to proceed with the work, they had to use a machine weighing 140 tons, propelled under a pressure of 3,000 tons under the bed of the Thames, it was not desirable to proceed too rapidly, but, on the contrary, that every step taken should be regulated with care and caution. Mr. Charlier, the Company's clerk, then read the report to the meeting. It stated that when the stoppage in 1828 took place, it was occasioned by no difficulties of an engineering nature, but solely from the original capital of the company being exhausted. At that time 599 feet out of 1,300 feet were completed, for the sum

of £120,000 only. The new shield had fully answered its purpose, and had enabled the work to proceed through some portions of the ground in almost a fluid state. The report concluded by stating that the Directors continued their unabated confidence in Mr. Brunell, and reiterated their opinion that at no very distant period this great undertaking would be completed. The Chairman stated that since June, Mr. Brunell had been able to proceed with the works at the rate of four and a half feet per week. When he was able to go on at the rate of five feet a week, the expense of the undertaking would be less than the estimate sent into Government, (Hear, hear,) and in a short time he had no doubt but that the work would be proceeded with at the rate of eight or nine feet per week. The Clerk then read the accounts, from which it appeared that in June there was a balance in hand of £3,000. The Chairman said that previous to June, Government had advanced them £30,000, and since that, £10,000 in addition; and the probability was, that another £10,000 would very shortly be advanced. The report was unanimously adopted.—(Times.)

EFFECTS OF COLD.—We had seen, says Capt. Back, in his account of his Arctic Expedition, the thermometer at 70 deg. below zero, at which time the aurora was bright. We now made a few experiments on the effect and intensity of the cold, the results of which were as follow:—With the thermometer at 62 minus, a square six inch bottle of sulphuric æther, with ground stopper, was taken out of the medicine chest exactly in the same state as it had been packed at Apothecaries' Hall, viz., with stopper down, and exposed immediately below the registering thermometer on the snow. In fifteen minutes the entire upper surface of the sides of the bottle was coated with ice, and a thick efflorescent sediment covered the bottom, while the æther generally appeared viscous and opaque. After having remained an hour, during which the temperature rose to 60 minus, it had scarcely changed, or perhaps, as Mr. King agreed with me (Captain Back) in thinking it was more opaque. The bottle was then carefully brought into the house and placed on a table within 4½ feet of the fire; and though so near, and with a temperature of 32 deg. plus, it did not recover its former clearness or purity for 42 minutes. A bottle of nitric æther, similar in dimensions to the sulphuric was not changed in the same time; but after two hours exposure it also became viscid, the temperature in the mean time having varied from 60 to 56 minus. A fluid drachm and a half of sulphuric æther was put into an ounce and half bottle, with a glass stopper, and when it had become viscous, the stopper was withdrawn, and a light applied, when it ignited with an explosion, and an escape of gas. On repeating the experiment, the ignition did not take place till the light was brought into contact with the liquid; but it was accompanied by a similar explosion. A small bottle of pyroligenous acid froze in less than 30 minutes at a temperature o-57 deg. minus, as did also the same quantity of one part of rectified spirit, and two of water, one part of the same, and one of water. Leeward Island rum became thick in a few minutes, but did not freeze. A mixture of two parts pure spirit and one part water froze into ice in three hours, with a temperature from 65 to 61 deg. minus. Another mixture of four parts spirit and one part water became viscid in the same time. A bottle of nitric æther, having been out all night, was thick, and the bubbles of air rose slowly and with difficulty; the mean temperature, at 6 A. M., January 17th, being 70 min. A surface of four inches of mercury, exposed in a common saucer, became solid in two hours, with a temperature of 57 deg. minus. On the 4th of February the temperature was 60 deg. minus, and there being at the same time a fresh breeze, was nearly insupportable. Such, indeed, was the abstraction of heat, that, with eight large logs of dry wood in the fire place of a small room, I could not get the thermometer higher than 12 deg. minus. Ink and paint froze. I made an attempt to finish a sketch, by placing the table as near the fire as I could bear the heat, but a scratchy mark and small shining particles at the point of the table convinced me that it was useless. The sextant cases and boxes of seasoned wood, principally fir, all split. Nor was the sensation particularly agreeable to our persons: the skin of the hands especially became dry, cracked, and opened into unsightly and smarting gashes, which we were obliged to anoint with grease. On one occasion, after washing my face within three feet of the fire, my hair was actually clotted with ice before I could dry it.—[Courier.]

M. BIOT.—The learned and scientific M. Biot has been delivering some very remarkable lectures at the College de France.—He has proved, that, by means of polarised rays, it is possible to ascertain the chemical action which takes place between bodies held in solution, in various liquids; an action which has not yet been discovered by less delicate means. This is a new branch of science, created as it were by this great natural philosopher, from which the most important and curious results may be expected.

SPONTANEOUS COMBUSTION.—An instance of spontaneous combustion is reported in the French papers, to have taken place at Annay, in the department of Avalon. A very fat woman, aged 74 years, and addicted to drinking brandy at 27 degrees, lived alone, and one evening returned home as usual, but, as she did not appear among her neighbors the next morning, they knocked at the door. No answer being returned to repeated demands, they summoned the mayor, who forced the door, and exposed a horrible spectacle, accompanied by an extraordinary smell. Near the chimney laid a heap of something burnt to cinders, at one end of which was a head, a neck, the upper part of a body, and one arm. At the other end were some of the lower parts, and one leg, still retaining a very clean shoe and stocking. No other traces of fire were to be seen, except a blue flame which played along the surface of a long train of grease, or serous liquor, which had been produced by the combustion of the body. The mayor found it impossible to extinguish this flame, and summoned all the authorities; and, from the state of the apartment and comparison of circumstances, it was concluded among them, that previous to going to bed, for which she had evidently been making preparations, the woman had been trying to ignite some embers with her breath. The fire communicating with the body by means of the breath, combustion probably took place, and would appear to confirm an opinion entertained by several learned men, that that which is called spontaneous combustion of the haman frame never takes place without the presence of some ignited body near the person predisposed to combustion. A surgeon who bled an habitually drunken person, accidentally put the blood extracted near a candle, when immediately a blue flame appeared on the surface, which he found extremely difficult to extinguish.

CABBAGES.—If cabbages are set on old ground, they are very liable to be eaten by the cut worm, or if they escape this destroyer, they are frequently injured by lice; and they will not grow so well as on new ground A piece of rich mellow greensward, (pasture ground is preferable,) rather moist is very suitable for cabbages, and will generally yield large crops. Put a few quarts of manure and a pint of ashes into each hill, mix them together, adding a little earth, then cover the hill and set the plants in the evening, if the weather be fair, and water them if the ground be dry.—[Yankee Farmer.]

CLOVER WITH OATS.—Many farmers are getting into the habit of sowing clover with their oats, under the belief that it takes better than with wheat or rye. The ordinary rotation in most parts of the union is corn, oats, rye or wheat with clover. In order to secure the enriching properties of clover, even in this rotation, it is said to be profitable to sow the clover, with a view of turning it under for rye, or wheat in the fall. The expense of seed is but trifling when compared with the benefits resulting from the pasture thus afforded from the time the oats are cut to that of plowing for winter grain—this alone is worth more than all the expense of seed, independently of the enriching qualities of the clover plowed in.

FOSSIL BEAR.—The fossil head of a bear was recently presented by M. Larrey to the French Academy of Sciences. It was of the species called the great cavern bear by Cuvier. It was found in the grottos of Milet, department of Gard. It does not appear that there at present exists any species at all resembling it; and the excellent state of preservation in which it was discovered, induced M. Larrey to purchase it. M. St. Hilaire was charged with its examination, for the purpose of drawing up a report upon it.

From the Quarterly Journal of Agriculture.

ON PRESERVING POTATOES AND RAISING THEM FROM SEED—BY SIR G. S. MACKENZIE, BART.

The Highland Society, always anxious to procure information, has offered a premium for the best and approved account, founded on experience, of the most successful method of preserving potatoes in good condition, in their natural state, for a period not less than ten months from the time of their being taken up. I hope to be able to give to the Society satisfactory information on the above subject, having paid long and particular attention to the potatoe, and to state some circumstances which do not appear to be so generally known as I presumed they were until I saw the offera bove quoted.

Of various methods I have tried for preserving potatoes from frost, that practised most commonly seems to be the best, viz: making a shallow pit about a foot and a half deep, on a dry spot, and heaping the potatoes like a roof to the height of about four feet. On the heap thus formed, straw is laid to the thickness of about eight inches, and over this the earth taken out of the pit, the whole being beaten firm by the back of a spade. Some time about the end of Febuary, or beginning of March, the pit is opened, and the potatoes being turned over, and all the shoots picked off. I may here remark, that where a few side roots have proceeded from the shoots, I have planted them, and had almost as large a product as from sets. The mode of planting them is to cut a drill with a spade so deep that the shoots may be covered about two inches. They are laid inclined upwards towards the soil, covered, and another drill made, and so on. The only risk is from frost; for if once nipt down, their shoots do not recover so readily as those from sets. On this subject I beg to add, that for early potatoes it has long been my practice to spread sets on the floor of a vinery, or a hot bed in March, with a little sand over them. By the time there is little risk of frost, the shoots are long enough for the sets to be planted out about the middle of April. I have frequently had the shoots nipt down, but they always recover; that is new shoots sprung up in a very short time, and I never observed that this made any difference in the period of the tubers becoming fit for use. The early potatoes I use are the London early for the first crop; some of my own, which is a little later, and remarkably mealy for an early potatoe. After the heap is turned over, as I stated above, it may be again covered, and the potatoes allowed to remain a month longer, after which they should be removed to a barn or shed and picked. They should now be frequently turned over, and picked free of shoots. If the eyes of a potatoe are scooped out, it will gradually dry, if properly exposed; and it may then be scraped into flour though not very white. In this state they will keep for an indefinite time; and there is no risk of their coming mity, as flour does; dried potatoes might be found useful during long voyages, though potatoe flour is better.

It ought to be generally known that there are varieties of the potatoe, which, though sufficiently protected from frost, will not keep, *under any management*, for more than a few months. Do what we will they decay, owing to their natural constitution; other varieties again will keep very long without any trouble. Hence the Societie's proper object is not to offer a premium such as the one which has given occasion for the present communication, but to offer one for raising new varieties, and producing one or more with as many as possible of the qualities which a potatoe is desired to possess. The same observation applies to the keeping of apples and pears, and various fruits and roots. Long keeping is a particular only belonging to some, and not to all varieties.

Some varieties of the potatoe are best for the table early in winter, and others are best in spring. Instead of having the trouble to raise different sorts for different seasons, it is best to sow seeds and to procure a number of varieties in this way for selection. It is now about twenty years since I first began to raise new varieties; and I will now state my mode of proceeding, that others may follow it if they think fit.

I first noted down the qualities which I thought it desirable a potatoe should have. These are, 1, dryness or mealiness; 2, agreeable taste; 3, moderate size; 4, regularity of shape, not having deep eyes; 5, not bursting when boiled; 6, not having a tendency to shoot at an early period; 7, long keeping; 8, productiveness. Among hundreds of varieties, I have not found one possessing *all* of these qualities, but I do not despair.

On the whole, I conceive that the object of the Society can be best attained by the recommendation to every one interested in the culture of potatoes, to raise new varieties from seeds. Seedlings rejected, I mean the second year's produce, need not be thrown away, but given to cattle or pigs, so that the space occupied by the plants cannot be said to have been misapplied.

Since the above notices were written, extensive and accurate experiments have been made in the London Horticultural Society, in reference to the question, whether it is best to plant sets or whole potatoes. I had long since found that sets were best. The first set of experiments made seemed, however, in favor of whole potatoes; but I pressed a repetition, and also repeated the experiments myself, and the question has now been finally decided in favor of sets. It might perhaps be of use that a well prepared abstract of the papers in the Horticultural transactions should be drawn out for the *Quarterly Journal*. A great deal of nonsense has been published about the remarkable failures of the potatoe crop in different places. The thing is still a mystery which may not be cleared up for some time. It appears that early planting gives heavier crops than late planting.

Having gather the apples from different varieties, I keep them till spring, when I open them, take out the seeds and dry them. A piece of ground being prepared by digging in some manure, but sparingly, and the surface being finely raked, the seeds are dropped thinly into shallow drills two feet asunder. When the plants appear, they are thinned out to eighteen inches in the rows, and I usually selected the strongest. Those taken out may be transplanted to another spot. As the plants grow the earth is heaped round them. I have observed that, with some exceptions, these plants which flower the same season seldom produce tubers. My experience has proved that the produce of the first season is not to be relied on as an indication of future productiveness; therefore no seedling then should be rejected the first year. I recollect a plant that produced but one tuber, about the size of a walnut; this produced the second year one hundred and twenty tubers of good size; but this degree of productiveness did not attend succeeding generations. I have observed in general that rough or scaly skinned potatoes are the first, and often too the earliest. I plant every tuber produced the first season that is not less than a pea, for should I hit on a good variety, it is then more rapidly increased; it is but a lottery, and some space of ground must be allotted to the drawing of it. I have had as many as three hundred varieties growing at once. Of course each variety must be tallied, and a memorandum kept of every thing connected with each. Each variety should be tested the second year, at the time it is taken up, and again in the spring, and those that are good at both seasons preferred for future trial. Indeed all may be rejected but that one that has the greatest number of the qualities noted. In this way every one may procure sooner or later a good variety of potatoes. It is of the greatest importance to procure in this way, for difference of soil, and even perhaps of situation, seems to have singular effects, a good potatoe in one soil proving bad in another, and *vice versa*. I have one variety that possesses the 1st, 2d, 4th, 5th, 6th, and 7th, qualities, which I have cultivated for about 18 years, and I have not yet succeeded in raising a better. It seldom, however, yields above twenty bolls an acre, of old Ross-shire measure, the peck being fifty-six pounds. Though there are many sorts more productive, yet this potatoe keeping very long under the management already described, has brought it into very general use in this quarter. I have had young potatoes of this sort, of tolerable size, at my table along with tubers of the previous year. It is ripe by the middle of September. During the two last seasons, the sets of potatoes decayed in many places. None of my own were affected, but some of my tenants lost large patches. I observed a wire worm on some of the decayed roots, but whether this worm was the cause of the failure, or the failure of the sets induced the insect, from whose eggs the worm proceeded, to lay them on the set, I could not ascertain. It often happens that effects are regarded as cause in such matters. It is my practice to have the potatoes cut into sets, and spread out to dry during ten days or a fortnight before planting them. This serves to prevent risk of their rotting in the ground. But I have known sets of some varieties rot soon after the appearance of the plant above ground; and others I have taken up sound when the crop was ripe. Thus it is clear that long keeping does not depend on the *mode* employed to preserve potatoes, but on the natural quality of a variety; and the varieties ought to be increased from seeds until the qualities I have enumerated are found in one, or at least the most important of them. It is the opinion of some that the productiveness of potatoes decreases by long cultivation. I doubt, at least it has not occurred to my observation. If a variety be planted on a soil different from that in which it has succeeded, it may fail, and I have known this to happen.

From the Philadelphia Commercial Herald.

We have been favored through the politeness of Mr. Reynolds, with a copy of the address delivered by him at Washington, 3d April last, on the subject of the projected expedition to the South Seas, accompanied with historical notes and other illustrations. A more interesting collection of documents, we are confident, has never been presented to the public. The mass of evidence adduced to show how very imperfect is the

knowledge as yet possessed by the public on the geography of the Pacific Ocean, and the errors and omissions which may be detected even in the best and most accurate charts of that most important tract, is such as must convince even the slowest and most incredulous of the necessity arising out of this circumstance alone of a thorough and accurate survey. More than 300 islands and reefs are enumerated by Mr. Reynolds which are either omitted entirely in the charts, or laid down erroneously, and when it is considered that these have been accidentally detected by vessels engaged in other objects wholly apart from discovery, not the slightest doubt can remain that, besides confirming the existence and correcting the position of these, an expedition expressly fitted out for the purpose must bring to light hundreds more of geographical facts, at present not even suspected. But this is only one of the ocjects which will be accomplished by the proposed plan. Another less brilliant purpose, but not less interesting, is to gain tidings of American citizens who have been taken prisoners by the barbarous nations of obscure islands and are still held in captivity. The fact disclosed in the pamphlet, that parts of the crews of two or three vessels are KNOWN to exist in this miserable condition, is alone a sufficient argument for the projected outfit. A third object, incidental, indeed, but of great moment, is the examination of the antarctic ocean, and the determination of the great point whether any insurmountable obstacle exists to reaching a much higher southern latitude than has yet been attained, and even penetrating to the south pole itself. We can do no more than allude to the arguments by which Mr. R. renders it probable that an open sea, free from ice, may exist to the south of the antarctic circle. Lastly, the voyage is to be considered as subserving in an important sense the extension of our knowledge on natural history. Much, we had almost said every thing, remains to be learned with regard to the productions, animal, vegetable and mineral, of the Pacific islands, the physical phenomena they exhibit, and the customs, the conformation, physical and moral, of the inhabitants. To accomplish these objects, men who combine science with judgment, practice with theory will be needed. Such men are to be had, and if the government is liberal in its provisions, will be engaged. For facilitating this class of researches, as well as for the other objects of the expedition, it is absolutely essential that one of the vessels employed should be of large size—a frigate. Such a ship will alone possess the accommodation requisite for pursuing scientific researches, and such an one is essential to afford the fleet proper countenance and protection. It is not indeed desirable that a vessel of this size should be actually employed in the subordinate expeditions. It would be sufficient for her to assume successively certain convenient stations, each of which would form for the time a place of rendezvous for the fleet, when their specific tours of observation were completed, but in which her presence would command for the whole respect and security. We dwell the more on these points because we know it has been suggested that the employment of a large vessel might as well be dispensed with.—We hope the suggestion, however respectable the quarter from which it emanates, will not meet with favor. It is an ill-judged and narrow economy, which, for the sake of saving a few dollars, would lessen the usefulness and hazard the ultimate success of an expedition, in which our honor and character as a nation are so deeply involved.

AERONAUTIC OBSERVATIONS.—Since Mr. Green's first attempt at ballooning he has travelled through the air above 5000 miles, having made 218 ascents, and has had a bird's-eye view of every part of England.—On the last occasion, when Lord Clauicarde went with him, he observed that surveyors and architects could with greater facility take plans of noblemen's estates by ascending a balloon, as they could have a bird's-eye view of every locality, and if they only once adopted that method they would never relinqush it. Since the suggestion an artest named Burton called on Mr. Green to obtain in him the plan of a balloon constructed so as to act in the above way, it being connected to the car by a swivel. The inventor proposes to build a waggon, for the purpose of fastening a balloon to it, which, when filled with gas, which can be done in various parts of the country at gas company's gasometers, may be conveyed to any place a surveyor requires, where, on a calm day, he can take plans, carrying with him the proper instruments. The balloon will then be fastened by ropes to the spot most favorable for observation, and raised to an elevation of 300 or 400 feet, as necessary In this way a bird's-eye view can be taken of any town or city. Mr. Green is willing at any time that his balloon, by way of experiment, may be made use of in that way. [Globe.]

TOMATOES.—The Indiana Farmer says that Tomatoes may be kept fresh through the winter, by packing them in jars—laying alternately a layer of sand a layer of tomatoes until the vessel is full, after which cover them up tight to keep the air out, and place them in a dry cellar.

The field of Waterloo is now converted into a large manufactory of sugar from the beet root, several Belgian capitalists having established works on the spot. The soil in that neighborhood is said to be excellent. It has been well manured with human gore, and must produce no other than the *blood beet.*

From the Scotsman.

CAPTAIN S. BROWN'S METALLIC LIGHT-HOUSES.

It has been proposed to place a lighthouse on the Wolf Rock, near Land's End, a position where it would be exposed to the most violent storms of the Atlantic; and a plan was drawn up for the purpose by Mr. Stevenson, who holds a high rank in this department of engineering; which plan, Mr. Brown thinks, would require fifteen years for its execution, and cost £150,000. Mr. Brown undertakes to erect one of bronze, 90 feet high, which would answer the purpose as well as the stone one of 134 feet, for £15,000, and to complete it in four months. Lighthouses are generally of masonry, the outer stones clamped with iron, and in large blocks, to lessen the number of joints. The one on the Eddystone Rock, near Plymouth, erected by the celebrated Smeaton, is 24 feet in diameter at the base, and 90 feet in height, of which 72 consists of solid masonry. That built by Mr. Stevenson on the Bell Rock, near Arbroath, is 40 feet in diameter at the base, and 110 feet in height, of which 102 consists of solid masonry. The defects of such a structure are obvious. In the first place, it consists of some thousand pieces; and, among as many thousand joints in it, a few faulty ones would be fatal to its strength. Secondly, its great breadth presents an enormous surface to the action of the winds and waves. Mr. Brown estimates, from experiments made by him at the extremity of Brighton Chain Pier in a heavy south-west gale, that the waves impinge, on a cylindrical surface of 1 foot high and 1 foot in diameter, with a force equal to 80 lbs.; to which must be added that of the wind, which, in a violent storm, exerts a pressure of 40 lbs. He computes the collective impetus of the wave on the lower part of Mr. Stevenson's proposed lighthouse for the Wolf Rock, of the surf on the upper part, and of the wind on the whole, to be equal to 100 tons. On the bronze column of 90 feet, which Mr. Brown, proposed to to substitute for the stone structure, the pressure, calculated in the same way, would be only 6½ tons. The natural height of the wave in a storm is supposed not to exceed 18 or 20 feet; but the *surf*, which is, we suppose, half water and half spray, rises, at times, above the head of the Eddystone column, *hooding* the lantern in a watery coat, and sometimes extinguishing the lights. It unfortunately happens, that adding to the height of the column scarcely produces any greater security to the lights; for, as the breadth must be increased with the elevation, the surf, instead of splitting and passing of by the sides, as it would do upon a smaller column, just mounts so much higher, having a greater surface to resist its onward movement. At the Bell Rock, which is not exposed to such heavy seas as the Eddystone, the surf in a storm mounts to the lights, which are 100 feet above the ordinary level of the sea. At such times, the column is felt to *tremble* when struck by the huge mass of rolling waters; and the keepers, perched like two sea-mews on the top of a beacon staff, with nothing but the raging elements around them on all sides, feel their situation (as they confess) very forlorn, and naturally think of the sins of their past life.

Mr. Brown's proposed metalic lighthouse is 90 feet high, 14 feet in diameter at the bottom, and 4 feet at the thinnest part. The lower half called the base, is in four pieces, each piece consisting of a portion of a hollow cone (or paraboloid,) wider below than above, and about ten feet high; the lower piece is sunk 3 feet into the rock and is fourteen feet in diameter at its under margin; the fourth piece is six feet in diameter at the top. These four pieces fit into each other, the neck of the lower passing into the socket of the upper, and both being secured by flanges; so that the joints are, in some degree, stronger than the entire part of the shaft. Above these is the smaller part of the shaft, which is in three pieces of nearly the same length, and fitted in the same manner. Above this, the shaft widens out into an inverted cone, which forms one piece, and supports the more important parts. These, are first, the keepers house, which is 8 feet in diameter, and 7 feet high, with a gallery round it, "for lookout, and walking exercise." Next the lantern 9 feet wide and 10 feet high to the cupola, for containing the lights. The house or sitting room, is made of two concentric cylinders of sheet copper, 9 inches asunder, to equalize the temperature, and attached to each other by rivets; it is formed into compartments for bookcases, shelves and lockers, with a recess for the back of the stove. Immediately below the house, in the swell of the shaft, are the

sleeping-berths. To complete the description of the column, we shall add, that the upper section of the base contains two tanks, one for oil, and one for fresh water; the next section, above, is for coals and provisions; and the one above that, a general store. Access is obtained from below by the chain ladder reaching down to the sea; and by ladders in the inside, by which the keepers mount to their ærial abode. The whole work, 90 feet high, would cost £16,000 or £17,000, if entirely of bronze; £11,300, if the base were bronze, and the upper part cast-iron; or £9000, if entirely of cast-iron; and it would be erected in four months.

The advantages of this plan of Mr. Brown are the following:—1. The expense of erecting lighthouses is much diminished, so that six may be erected for the sum now spent on one. 2. The time necessary for building them is contracted from years to months; and the chances of loss of life in the progress of the work are proportionably diminished. 3. The bronze lighthouse, from the slenderness of its shaft, and the smallness of the resisting surface, will not carry the wave and spray half so high as the stone lighthouse; and, with two-thirds the elevation, it will afford equal protection to the keepers and the lights. 4. From this slenderness, and its diminished height, the strain of the surge and winds upon it, in a storm, will not exceed one tenth of what a stone structure is exposed to. 5. It has but 8 joints from the bottom to the lantern; while the stone lighthouse has thousands; and the bronze joints admit of being made as strong as the entire part of the shaft. 6. That its separate portions, being complete circles, cast solid, each is *per se*, capable of resisting any lateral impulse of the water whatever, and the column only can be injured by a transverse pressure operating upon its length. 7. That the cohesion of the materials, or the power of the column to resist fracture by a transverse strain, is probably a hundred times as great as in an equal column of stone. 8. That the natural stability of a bronze column, derived from downward presure, must be considerably greater than that of stone. In addition to this source of strength, the column is to be secured 10 feet into the rock by numerous bolts; so that it cannot be removed, without carrying all that body of rock along with it, which would require a pressure of several hundred tons.

As to the durability of bronze in water, when proper precautions are adopted, two letters are given from Mr. Brande and Mr. Faraday, which remove every reasonable doubt. Both of them think that cast-iron might answer sufficiently well for the upper part of the column. Nothing is said about the chances of injury from lightning; but the tower, being entirely metalic, it would act, we suppose, as a very perfect conductor, and convey the electricity to the earth without injury to the keepers. Bronze is an alloy of copper and tin. We should have observed that, in Mr. Brown's opinion, a bronze column could be erected on a sand-bank, by piling, or by a different process, which he describes, and where a stone structure would be impracticable.

The situation of the keepers in one of Mr. Brown's lighthouses is one of the most singular which the multifarious occupations of human life present. The stone tower, though really less secure, has an appearance of solidity, which goes some length to satisfy the imagination; but Mr. Brown's watchmen are suspended in mid-air, on the top of the pillar, whose slenderness, compared with its length, reduces it to the appearance of a small rod. Cooped up in a cage, one half of whose narrow floor projects over the sea, or standing on a gallery which hangs over it completely, they live for months together without exchanging words or thoughts with their fellow mortals. There they pass the dark and stormy nights, with the winds howling, and sea birds shreiking around them, while the abyss foams and rages below, and the slender stem that bears them above it quivers under their feet when struck by the angry surge, or beaten by the tempest. No situation can be conceived more dismal and monotonous, more beset with terifying circumstances, or better calculated to impress the mind with a constant feeling of insecurity. Such, however, is the force of habit in reconciling men to outward circumstances, which appal at first sight, and to real and formidable dangers too, that there is never any want of candidates for the most hazardous employments; and no difficulty is, we believe, apprehended in getting sober considerate persons to commit themselves to these sea-girt ærial cradles; nor any doubt felt, that, after a month's experience they will sleep secure in them, though lullabied by storms and tempests, the aspect of which, in such a situation, would drive a greenhorn landsman mad.

To understand the importance of lighthouses, it may be proper to state, that the number of British vessels shipwrecked annually is about 550, or *one and a half per day*. The average burden per ship of the mercantile navy is about 110 tons; and, if we value old and new together at half the price for building, or 5*l* 10s per ton, we have £600 for the value of each, an £330,000 for that of the whole; which may be reduced to £300,000, by deducting the value of the sails, masts, and other materials saved from some of those stranded. If we add an equal sum for the value, of the cargoes, the whole loss from shipwrecks will be £600,000 per annum. This statement proceeds on an old estimate from 1793 to 1829; Mr. Maculloch says, in the *Supplement* to his *Dictionary*, that the number of ships lost, or driven on shore, in 1833, was on less than 800. It is probable, then, that the annual loss by shipwreck is not much short of a million sterling. If one fifth part of this loss could be prevented by additional lighthouses, the saving in money would amount of a million in five years, to say nothing of the still more important saving in human life.

AVERY'S ROTARY ENGINE.

The numerous inquiries, from every part of the country, in relation to this simple, yet extraordinary engine, require me to publish such facts as have come to my knowledge, testing its wonderful power,—and establishing its value both in relation to its *original cost*, and the cost of *fuel* to keep it in operation.

This engine works *without* a *piston*, and with a constant flow of steam, and therefore, say those who do *not* understand it, without the benefit of its *expansion* and of course with a great *waste* of steam. In reply to this objection I will observe that the construction of this engine is such as to avoid, probably, nine tenths of the friction of the *piston* engine, as it has only to overcome the friction of *two* journals (of 1¼ in diameter) and the resistance to the *arms* of a highly rarefied atmosphere as they revolve within the case. There is no *fly-wheel* to carry, and no crank to pass the center, as in the piston engine, but a *constant* and *perfect* application of power, at the *end of a Lever*, the end of which moves through the space of eight to twelve miles per minute; or to express it in a different manner, with a lever—the arms of the engine—30 inches in length, having apertures equal to $\frac{1}{10}$th of a square inch and working steam at 120lbs to the square inch, we have a *pressure* at the aperture, or at the end of the lever, equal to 12lbs; and this *pressure*, or *weight* revolves through the space of 8 to 12 miles in a minute, giving us power, less the friction, equal to that of a canon ball of 12lbs. projected at an equal velocity, and this power may, I have no doubt, be increased as the *length* of the arm, the size of the *aperture*, and the *pressure* of steam on the boiler shall be increased.

Having the power we have only to apply it to useful purposes, and this *has* been, and is *now* done in various ways, in different parts of the country.

This engine is peculiarly appropriate for all purposes which require rapid, and uniform motion, and it will be found highly economical both in its first cost and the *cost* of *fuel*.

One of its great advantages may be said to consist in the perfection, and high velocity, of its motion—as we have *in all* cases to geer *down*, instead of *up*, to the work—which may almost be said to give us the power of gravity, in addition to that of steam. Another important recommendation is its *simplicity*. It consists only of a shaft of 1 to 1½ inches in diameter, about 30 inches in length, with two *bearings*, or journals, and at right angles to this shaft the *two arms*, or a flat bar of cast steel 5 feet in length and 4 inches in width, one inch thick in the centre and ⅜ thick at the ends. The shaft passes through the centre of the arms, which are made fast to, and revolve with the shaft, which is also hollow at one end, or as far as the arms—receiving the steam through 1¼ inch pipe, from the Boiler, and passing it into the arms. The shaft passes at right angles through the centre of, and the arms revolve *within*, a cast iron case—which may be represented by two large earthen plates turned inside together and standing up edgewise. On the shaft at the end, opposite to where the steam is received, is a pulley 5 inches in diameter, from which the *band* passes to a large pulley on the line shaft and from which the *power* is applied to any machinery, with any velocity that may be required. A 25 horse engine consists of the shaft and arms, made of cast steel, weighing 65 or 70 lbs—and of a cast iron case weighing about five or six hundred lbs—of course there is very little to get out of order, or to require an *Engineer* to superintend, consequently the

expense of *attendance* and *repairs* will be materially reduced, as well as those of *first cost* and *fuel*.

There is no power probably so perfect for *Cotton* and silk, spinning and weaving, or for *Flouring*, and Saw-mills, for machine shops or for Sugar and Rolling mills, and indeed for *any* purpose where a rapid and perfect motion is required as AVERY'S ROTARY ENGINE; and those who have used both, the Piston and the Rotary Engine, as well as those who have examined both with a view of using *one*, or the *other* as they should become satisfied of its superiority, or economy in fuel, have given a *decided preference to the Rotary*—and others who are now, and have been for many years, using the Piston Engine are satisfied of the economy, both in the cost of fuel and *Engine*, of the Rotary; and one such, at least who is now using a first rate *Piston* Engine in a *saw-mill*, has ordered a *Rotary*, to be used in its stead, because he is satisfied that he can save the cost of the Engine out of *one years* fuel.

The expense of a Rotary Engine of *twenty* horse power *without* Boilers and gearing, is *six hundred* dollars at the shop—and with *Boilers, pumps, pipes, gearing and machinery* for a saw mill with *two saws* up to the cranks to which the saws are attached is from $2000, to $2200,—and such a mill will saw from *four to five* thousand feet pine to each saw, *every twelve* hours. A mill of this description on the St Clair river, in Michigan, *averaged over 4000 feet to a saw*, for *every day*, except Sundays, *from the middle of April to the 1st of August, without any other fuel than its slabs and saw dust*.

In reply to the objection raised by those who say it requires *more* steam than a piston engine, it is sufficient to say that *one hundred* lbs., of *Pea coal per hour* is all that is required to drive a *twenty horse* Engine—and that even a *less* quantity than that is used in a Saw mill in constant use in this city.

The following statement is from John Harris, Esq., the Engineer and Agent of a Goldmine at Mecklenburgh, North Carolina. Mr. Harris was much opposed to having it put up, as he had no confidence in it—but after using it for nearly a year he speaks of it as follows—

"The estimated capacity or power, of this Engine was considered by the maker to be equal to twenty horses, which power it has generally performed since it has been in full operation, so considered by myself as well as others employed at the establishment.

The Engine, since its erection, has been kept in constant operation, Sundays and accidents excepted.

When in full operation, as all the machinery has been for four months past, 3 cords of wood has been found sufficient to raise steam enough to carry the whole machinery 24 hours.

The quantity of water evaporated *per hour*, as near as I could ascertain, when in full operation, has been about 60 gallons, or *three* gallons to *each horse power*.

The Engine was first started about the beginning of Sept. 1835, and continued to work the pump and four mills only, until March, 1836, at which time the whole machinery was attached, making altogether nearly 10 months.

The cost of repairs has been very trifling. The whole expense of repairs, that could properly be said to belong to the engine during the whole time, will not exceed ten dollars.

With careful attention it is not liable to get out of order.

The cost compared with a Piston engine of equal power will not, I presume, much exceed one half that of the Piston engine.

If I were in want of another engine of about 20 horse power I would certainly prefer the Rotary to the Piston engine

In conclusion sir, after answering your several questions, permit me to state that *in my opinion, the Rotary is preferable in many respects to the Piston Engine. It can be attended by persons of less skill, is less expensive in transportation, and less expensive in erection than engines generally of the piston kind.* I am sir, very respectfully, Yours' &c.

JOHN HARRIS.

The following letter is from gentlemen who have a Saw Mill in the town of Clay, Onondaga Co.

Clay, June 11, 1836.

GENTLEMEN.—We give it as our opinion from what knowledge we have of the Rotary Engine, that it is preferable to the Piston.

The slabs and saw dust during the summer will nearly keep the Mill in operation.

The average business of the Mill in sawing custom logs is about four thousand feet, and the Mill has cut over seven thousand feet out of a choice lot of logs.

J. FREEMAN,
E. L. SAWER,
J. W. SCHROEPPEL.

Messrs. E. LYNDS & SON. and
W. AVERY.

The following statement shows the work done by Isaac Pierce's *Mahogany* Sawmill at 91 Attorney Street, N. Y.

"The arms of the engine are 30 inches long from the centre of the shaft to the apertures, and the apertures are each the $\frac{1}{10}$ of a square inch..

"The following machines are all attached to, and operated by it, viz.:—

"1 upright saw with 30 inch stroke, or 15 inch crank.

"1 buzz saw, 24 inch, cutting a kerf of $\frac{3}{16}$ of an inch, with 22 to 2400 revolutions per minute.

"3-24 inch circular veneering saws.
"1-26 " " " 4
"1-27 " " " " varying from 12 to 1500 revolutions per minute

"1-15 inch buz saw, with 1200 revolutions per minute, and

"1 whip saw for curves, with 9 inch sweep and 250 strokes per minute.

"1 grindstone.

"1 blower for the furnace.

"And the pump raising water 30 feet into a reservoir for its own use.

"The boiler now in use was made for a piston engine, and was intended for 15 horse power.

The following letter is written by Professor JAMES RENWICK of Columbia College, who has examined the engine and its performance.

To D. K. MINOR.—I have seen the engine upon Avery's principle which is employed in the Saw mill in Attorney street, and witnessed its operation. Its performance appears to be fairly set forth and not over estimated in the article from the Mechanics Magazine for April, page 244. In comparing this engine with those of other forms, it is obvious that there is a very great saving in the original cost of the apparatus working with equal power. In respect to the saving of fuel, this is also great, when compared with that expended in engines as they are most generally employed; and the quantity consumed does not exceed that used in the most advantageous application of the condensing engine, where the work performed, by a given quantity of coal, has been quadrupled. Compared with the ordinary high pressure engines, the fuel employed appears to be reduced in the proportion of one to three. I cannot but believe, that the engine of Avery will, in many cases, be found more economic and efficient, than any other form which has hitherto been used.

JAS. RENWICK.
Columbia College, 11th July, 1836.

☞ With the above statement of facts within my own knowledge, and the statement of those who have used them, and examined them with care, I ask the attention of those who are in want of Engines, to AVERY'S ROTARY ENGINE — and for more definite information refer them to Mr. Joseph Curtis, who is now ready to receive and execute orders at the "NOVELTY WORKS," N. Y.

D. K. MINOR, 132 Nassau-st.
November 1st, 1836.

APPLICATIONS OF CHEMISTRY TO THE USEFUL ARTS, BEING THE SUBSTANCE OF A COURSE OF LECTURES DELIVERED IN COLUMBIA COLLEGE, NEW-YORK, BY JAMES RENWICK, PROFESSOR OF NATURAL EXPERIMENTAL PHILOSOPHY, AND CHEMISTRY.

VII.

USEFUL APPLICATIONS OF THE EARTHS.

1. LIME.

PREPARATION OF QUICK LIME.

AUTHORITIES.—DUMAS. Chimie appliqué aux Arts.
BISTON. Manuel du Chanfournier

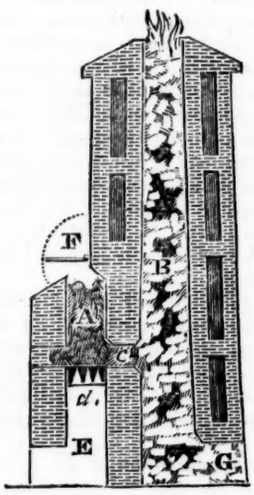
Under the general name of limestones are comprehended all mineral substances which

contain not less than half their weight of carbonate of lime. Quick lime is prepared from most of these limestones, by calcination, and is characterized by the property of absorbing water with phenomena of heat, an action which, if it also cause the lime to fall to powder, is called slaking. Lime prepared from different varieties of limestone has different properties in this respect. In some cases the action is rapid and violent, the heat produced, great; in others the operation is more slow, and the heat less intense. There are also, limestones which after calcination will not slake. The limestones which are richest in carbonate of lime belong to the first variety; those which contain carbonate of magnesia in a proportion greater than 10 per cent. to the second; while the resistance to the action of slaking in the third is due to the presence of argillaceous matter. The two first varieties are alone suited to the preparation of mortar. The last variety will not make mortar in the usual manner, but is nevertheless of great value as an ingredient in cements which will resist the action of water. In the act of slaking, quick lime, which retains after calcination the shape and structure of the limestone whence it is prepared, falls, as has been stated, to fine powder. It also falls to powder after exposure to the air, when it is said to be air slacked. In the first case the lime combines with water forming a solid hydrate; in the latter it absorbs carbonic acid from the atmosphere, and returns to the same chemical state which the limestone possessed before calcination.

The calcination, or, as it is usually styled *burning* of lime, is performed in chambers built of stone, which go by the name of kilns. Of these there are two descriptions, ordinary and perpetual. The ordinary lime kiln is of the shape of a truncated cone, or of a portion of an ellipsoid. The limestone is prepared for calcination by breaking it into pieces none of which have a greater dimension than 3 or 4 in. cube. The larger fragments of limestone are employed in building a rude vault, over a cavity left in the lower part of the kiln. To this cavity an entrance or door is left in the wall of the kiln. The rest of the kiln is filled up with smaller pieces. When wood is used as fuel, it is introduced by the door into the space beneath the vault and is burnt on the floor of the kiln. When coal or turf are employed, an iron grate is provided, on which the fuel is placed, leaving an ash-pit beneath. In building the vault, the spaces between the stones are left of as great an area as possible, and in filling the kiln the largest of the remaining pieces are laid next to the vault, while the smallest fragments are used for covering the rest, and closing the top of the kiln.

The fire is at first moderate, in order that the limestone may be gradually heated. After 10 or 12 hours the quantity of fuel is gradually increased, until the mass of limestone is brought nearly to a white heat. After it has been kept for some hours at this temperature, the bulk of the mass of limestone decreases about one sixth, and flame issues almost free from smoke, from the top of the kiln. The intensity of the heat is then gradually diminished until the fire is permitted to extingush itself, for want of fuel. In order to complete the calcination of a given bulk of limestone in an ordinary kiln, nearly three times its volume of wood, or twice its volume of turf or coal is required. Much of this quantity of fuel is consumed in the gradual heating of the limestone and in preventing it from cooling too rapidly after the calcination is complete. It is therefore obvious that in a kiln in which the operation might be kept up without ceasing, a considerable saving of fuel might be ensured. Such a kiln is aid to be perpetual. The first attempt at the construction of a perpetual kiln was made by Count Rumford. Its construction and use will be understood from the annexed plate. Pl. 1.

Plate 1.



A. Furnace
B. Body of the kiln.
C. Flue by which the flame and heated air passes from the furnace to the kiln.
d. Grate.
E. Ash-pit.
F. Iron Door.
G. Opening by which the lime is removed.

The furnace being charged with fuel and lighted, the door F, and the mouth of the ash-pit are left open until the fuel is ignited. The mouth of the ash-pit is then closed, and a draught will be directed downwards through the fuel into the body of the kiln, and carry the smoke, flame, and heated air through the limestone which it contains. That which is completely calcined is removed at the opening G, and its place supplied by limestone thrown in at the top of the kiln. In consequence of the air being drawn downwards through the burning fuel, the smoke is almost wholly consumed.

An improvement in the kiln of Rumford was made by Monteith of Closeburn in Scotland, but although more effectual and convenient, the cost of its construction would forbid its being brought into common use.

The consumption of the smoke, which is the distinctive character of these two kilns, is of little value in this case. Hence, various kilns have been contrived in which the draught of the fire places is not inverted, and these are placed in the circumference of a circle round the body of the kiln. It is unnecessary to describe the kilns of this character, for a far simpler form has been found sufficient, wherever coal or turf can be employed as a fuel. The kiln to which we refer has the form of an inverted truncated cone whose height is twice as great as the diameter of its greater base. A few faggots or billets of wood are placed in the bottom of such a kiln, and set on fire. These are covered with coal, and when the latter is fully ignited, the kiln is charged with alternate layers of limestone and coal, until it is filled to the top. The combustion gradually extends itself through the several beds of coal. When the calcination is completed, two thirds of the charge are withdrawn from the lower part of the kiln, which is then filled up with fresh layers of limestone and coal. In this way the consumption of coal does not exceed one fourth of the bulk of the limestone calcined. Fuel also of a very inferior description will answer the purpose of lime burning in the last mentioned kiln, as, for instance, the refuse cinders of bituminous coal, and the screenings of anthracite. A kiln of this construction is represented pl. 2.

Plate 2.

Fig. 1.

Fig. 2.

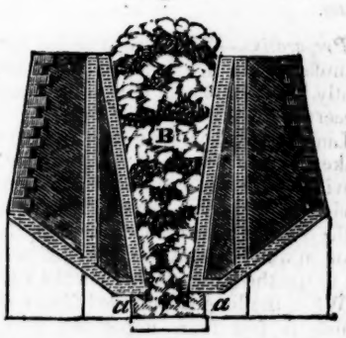


Fig. 1 is a ground plan, fig. 2 a section.
B. Body of the kiln.
a, *a*, *a* opening through which the lime is received.

PREPARATION AND USES OF MORTAR.

Rationale.—When the hydrate obtained by slacking quicklime is mixed with water to the consistenee of paste, a small portion of the lime is dissolved; the dissolved lime attracts carbonic acid from the atmosphere and is precipitated upon that which remains undissolved, the water is thus left free to dissolve a new porton of the lime which is in its turn precipitated, and this successive action will be continued so long

as moisture is present, or any portion of quicklime remains. The cessation of the action arises more usually from the loss of moisture by evaporation, than from the complete solution of the quicklime. A portion of the latter therefore remains, which is gradually converted into carbonate, and thus the semiliquid paste is gradually converted into a white solid possessing but little adhesion. If silica be mixed with the lime and water, the precipitation of the carbonate takes place upon it in preference, and the adhesion between them is stronger than in the former instance. Indeed, it appears as if the chemical affinity which exists between lime and silica influences the adhesion, and that the conversion of the carbonate into silicate of lime begins, and continues to go on for ages. It is only in this way that we can account for the long series of years which elapses before mortar attains its limit of hardness, and a force of aggregation often superior to that of the limestone whence it is made. The theory of the formation of a silicate of lime is also corroborated by the act, that even in the most ancient and hardest mortars, the quantity of carbonic acid which is present is always less than would be required to convert the lime into carbonate. For the same reason that the adhesion of the precipitated carbonate of lime to silica is greater than to other portions of lime or carbonate, the adhesion of mortar to brick or siliceous stones is greater than to limestone. It is however necessary in all cases that the stone or other material which is to be laid in the mortar be moist, or at least do not absorb moisture. If the material absorb water from the mortar, the solution and precipitation no longer take place, and no adhesion will ensue between the mortar and the stone. In laying brick, therefore, it is necessary that it be wet before the mortar is applied, otherwise no bond will take place.

Preparation.—The lime intended for the manufacture of mortar should be either recently burnt, or should have been carefully preserved from the action of air.

Lime which has been long slaked will make as good mortar as recent quicklime, provided the latter condition have been attended to, but as it is more difficult to judge of the freedom from carbonic acid in slaked than in quicklime, it is considered preferable to use the latter rather than the former.

When the lime is prepared from a stone which is free from impurities, it slakes readily, and may be converted into mortar as the art of slaking is going forward. For this purpose, a sort of basin is formed on the ground, by means of the sand intended to enter into the composition of the mortar. The lime is thrown into the middle of this basin, and water gradually poured over it. The quantity of water must be sufficient not merely to form the solid hydrate, but to convert it into the mechanical mixture known as the milk of lime. As the quicklime falls to powder, it is gradually incorporated with the sand and water by means of a hoe, which is also of use in breaking down those parts of the lime which longest resist the action of the water.

If the lime be combined with magnesia, it slakes too slowly to permit this method to be employed. Such lime should be placed in a conical pit, water thrown upon it, and then covered up with the sand intended to be mixed with it. Days, or even weeks may elapse, before the whole mass shall have fallen to powder, but after the disintegration is complete, such lime will make as good a mortar as that prepared from a pure carbonate. It is more usual to slake such lime in the neighborhood of the kiln, and to separate the parts which have not fallen to powder by means of a screen, but this method is objectionable, as the finer and richer portions are liable to be charged with carbonic acid before they can be transported to the place where the mortar is to be prepared. A method which is preferable to either consists in plunging the magnesian lime into a vessel of water, where it is permitted to remain until completely pulverised. The excess of water is then drawn off, and the lime with the residue of water incorporated with sand. The sand which is to be used in making mortar, ought to be made up of angular fragments of quartz. Such sand is found in the bed of running streams, or in diluvial and alluvial deposites from running water. It is designated by masons by the epithet sharp. A mixture of argillaceous matter deprives it of this quality, but as this may be separated by agitation with water, the necessary sharpness may often be acquired by washing the sand.

For laying brick or well jointed stone, fine sand is to be preferred; for common hewn stone, sand of coarser grain; and for rubble work, the mortar made with coarse sand should be mixed with small pebbles, or rather with angular fragments of a siliceous stone.

The best proportion of the materials of mortars, is one part of a pure quick lime to three of fine or four of coarse sand. If the lime be of less purity, the quantity of sand must be lessened in such manner as to bear the same proportion to the pure earth contained in the limestone.

The rapidity with which mortar sets may be much increased by the use of quicklime, ground to powder, instead of being reduced to that form by slaking. This method is the invention of Loriot, a French engineer, who supposed he had discovered the secret of the hardness of the ancient mortars. He directs that three parts of slacked lime be mixed with four of water, and that sixteen parts of pulverised brick or sand be added. After these materials are thoroughly mixed one part of quicklime ground to fine powder is to be added. This mortar has not all the valuable properties which were anticipated by its inventor. It might however, be used to advantage in building in frosty weather.

Limestones which contain silicoous or argillaceous matter are fit for the preparation of mortar, so long as the lime prepared from them retains the property of slaking, but the proportion of sand with which they can be mixed must be still further lessened by the bulk of the other earths contained in the limestone.

HYDRAULIC CEMENT.

History.—The ancients were acquainted with a substance which, when mixed with a pure quicklime and water, formed a mixture that possessed the property of hardening under water. This is a volcanic product having the form of powder, originally found at Puteoli in the neighborhood of Vesuvius, and called from the locality *Terra Puteolana.* The material is still used on the shores of the Mediterranean and is called Puzzolana.

The wants of the people of the Low countries led them to seek in their own vicinity for a substitute for Puzzolana. This was found in a rock furnished by extinct volcanoes, whose traces are to be seen on the banks of the Rhine. This differs from Puzzolana in requiring a calcination to prepare it for use, and when calcined it absorbs moisture so readily that it must be carefully preserved from contact with the air, unless it be used within a short time of its manufacture. During the sixty years war, the people of Holland were cut off from a supply of this important article. In order to replace it, earth was drawn up from bottoms of their canals, formed into brick, burnt, and pulverized. This article was found to be nearly as efficacious as the native product, and both go by the common name of Terras or Trass.

Not only is there a substance which when mixed with pure lime makes an hydraulic cement, but these are varieties of limestone, which are characterized by refusing to slake when water is poured upon them, that when mixed with sand have the same valuable property. The discovery of this property seems to have been accidental and its date unknown. Such limestones were first worked at Aberthaw in England, and Salenches in France. When the construction of the New-York Canals was commenced, such limestones were found in its vicinity, and since that period quarries of the same description have been opened in various parts of the United States. It may indeed be imferred that there is hardly any calcareous formation some of the layers of which do not possess this property.

Even where native puzzolana, Terras, or an hydraulic lime are all wanting, the example of Holland shows that artificial substitutes may be found wherever clay can be obtained.

Of all the materials for the preparation of an hydranlic cement, those which contain within themselves all the necessary substances, and thus require no foreign matter to be mixed with them, seem to be best. Such are the septariæ found in the London Clay and used in the preparation of "Roman cement."

Rationale. If the scale of a smiths forge, or the black oxide of iron in any other form, is mixed with common mortar, it acquires the property of setting more rapidly, and speedily becomes so hard as to resist the action of watar. Clays rich in ferruginous matter, if burnt and reduced to powder, have the same effect upon lime. It was also found that the native Terras contained from 10 to 15 per cent. of oxide of iron. It was inferred from these facts, that the property possessed by a cement of setting in water, was due to the presence of oxide of iron. Some of the most valuable

hydraulic limes however, contain little or no iron, and Puzzolana is also poor in that substance. An isolated observation subsequently led to the ascription of the hydraulic property to the presence of oxide of manganese. Another view of the subject led to the hypothesis that hydraulic cement was obtained from a sub-carbonate of lime, the limestones from which it was prepared being in such a state of combination that heat could not expel more than half their carbonic acid. The theory which is now received is that of Vicat, who infers that hydraulic cement is obtained, whenever a silicate of lime is either formed in the calcination of the limestone, or generated rapidly by the action of the substances with which a pure lime is mixed. This silicate has the property of combining readily with water, and then the aqueous part of the cement speedily becomes solid. To this we may add that the ternary compounds of silica are formed with more readiness than the binary, and thus metallic oxides, alumina, and probably other earths concur in hastening the formation of the solid hydrated silicates.

PUZZOLANA.

AUTHORITY.—BELIDOR. Architecture Hydraulique.

Hydraulic cement may be made of puzzolana, by mixing nine measures of a pure quicklime, or an equivalent quantity of that which is less pure, with water, and twelve measures of puzzolana, and six measures of good sharp sand. If the place where it is to be employed in the erection of masonry is so situated that the stones may be laid above the level of water, no other preparation is necessary than in the use of common mortar. If it is to be used below the usual level of a mass of water, a coffer dam may be constructed. This is a case formed of piles and pile-plank driven into the bed of the mass of water, in such manner as to resist its passage. After the coffer dam is finished, the water inclosed within it is raised by a pump, or other appropriate hydraulic engine, and the work is performed, after the water is thus discharged, precisely as if it were common masonry. When the bed is level, or can be rendered so, a caisson may be employed. This is a water-tight vessel whose bottom is flat, and whose sides are vertical. It is made large enough to contain the proposed structure and at the same time have room for the workmen and necessary scaffolding. The caisson is buoyant, and floats at the surface of the water. The building materials are introduced into it, and covered up in regular courses from its bottom. As the work advances the caisson sinks, until it rests upon the bed. After the structure has been raised above the level of the surface of the water, the sides of the caisson may be removed, but the timber bottom remains as a foundation for the masonry. Stone may also be laid in hydraulic cement beneath the surface of a mass of water by means of the diving bell.

A more rapid mode of construction was employed by the ancients, and is still used in the ports of the Mediterranean. Instead of a tight coffer dam, a mere inclosure of woodwork is formed in the water, inclosing a space of the figure of the contemplated structure. To 27 measures of hydraulic cement, made as has just been described, 16 measures of pebbles or chip stone are added, and the whole incorporated by stirring it for an hour, either with a hoe in the hands of a workman, or by the aid of machinery. The mixture is then formed into a conoidal heap, and allowed to remain at rest until a hard crust is formed on its surface. This will happen in warm dry weather in five or six hours, but in moist weather, some days may elapse before the cement acquires a proper degree of consistence. The mass is then broken up by the pickaxe, and intimately mixed for the second time by agitation. No water need be added to the mass, but it will regain its fluidity by stirring. When the water in which the structure is to be built is deep, the mixture is plunged into it by means of a wooden case of cubical shape. This is managed by means of a windlass moveable upon a railroad, and has a sliding bottom, or a shutter fastened by hinges. When this has been lowered until no more space is left than just suffices for the opening of the shutter, the latter is permitted to open, and the cement falls to the bottom. A second case full is lowered and deposited beside this, and the surface of the two masses leveled by rakes and other appropriate instruments. When a uniform bed, of about a foot in thickness over the bottom of the whole space inclosed by the wooden partition has been thus deposited and spread, blocks of stone of not more than eight inches cube are thrown upon the cement, until an entire layer of such stones has been spread over the cement, in which they are capable of partially embedding themselves by their own weight. Upon these a second layer of cement is spread by means of the case, which is followed by a second layer of stones, and thus the level of the surface of the water is reached. The case however becomes useless when the depth of water is less than twice the vertical dimension of the case. After the structure has been raised thus high, the cement is thrown in by baskets and hods, and the last courses may even be laid by the trowel.

In Europe, the wood which encloses this structure is usually removed, and may be employed again for the same purpose, but when wood is abundant, it would probably be better to leave it as a protection to the structure, until it decays, when the masonry will probably be perfectly consolidated.

Terras both native and artificial may be used in the same way. So also may the powder of burnt clay or brick, of calcined ochre, and roasted clay slate.

Terras is prepared from a columnar greenstone or trap rock found near Andernach on the banks of the Rhine. This is roasted and reduced to powder. A similar stone is found on the bank of the Hudson near Fort Lee, and might no doubt be used for the same purpose. Other varieties of trap rock or basalt may be prepared for a similar use, by heating them until they begin to fuse, and grinding them to powder.

Hydraulic Lime.—Hydraulic lime is calcined in the same manner as common limestone. It is prepared by grinding it in a mill to a fine powder, and ought to be kept for use in tight casks. Any limestone which contains from 9 to 10 per cent. of argillaceous matter is slightly hydraulic, and it possesses this property in perfection when the proportion of that compound amounts to 20 or 30 per cent.

An artificial cement may be prepared by mixing 3 parts of chalk with one of clay, tempering the mixture with water, forming it into bricks, calcining, and grinding to powder. Care must be taken, that, while the heat must be sufficiently intense not only to drive off the carbonic acid from the chalk, but also the last portion of water from the clay, the mixture does not begin to fuse, for, after this stage is reached, the hydrate can no longer be formed.

It was long supposed that the hydraulic limes and artificial cement could not be used in building in a mass of water, by throwing in loose stones upon a bed of cement mixed with chip stone, as described under the head of puzzolana. But recent experiments in France have shown that this idea is unfounded, and that the hydraulic limes mixed with common sand, have all the properties of the cements of which puzzolana or terras form a portion. It is necessary however, to examine experimentally the length of time which they take to set beneath the surface of the water, for this will differ with the different varieties of the natural mineral; and where the rate of setting is not such as to render the mixture hard within a few hours, the mixed cement and chip stone must be allowed to lie in heaps until it becomes hard at the surface, before it is plunged into the water.

Roman Cement.—This celebrated article is prepared in England from a stone found in nodules in the geological formation called the London clay. It is a compact substance of a brown color, susceptible of high polish. It is usually divided into irregular masses by veins of crystalized carbonate of lime. The quantity of silica and alumina contained in the brown portion is sufficient to form the cement without any further addition, when it is to be used beneath the surface of water. When thus unmixed it will set, either in the open air or in contact with water, in not more than fifteen minutes. Its properties in the two cases are however different, for it does not, if used unmixed, increase in hardness after it has once set, when merely exposed to the air; but if immersed in water, or in a damp position, it gradually acquires the firmness of the strongest native limestone. It should therefore never be employed pure, except when it is to be exposed to the action of water. Where it is used merely in a moist place, two parts of good sharp sand should be mixed with three of cement; if in a position exposed to frost, three parts of sand to two of cement; while in a dry and warm climate or in covering walls exposed to the sun, at least five parts of sand should be mixed with two of cement. It is probably owing to the Roman cement, when applied as a stucco, having been used pure, and laid upon dry brick, that its use has been attended with little success in this country.

for when properly prepared and applied, it has borne equally well the extreme climate of Canada, and the torrid air of the West Indies. Its use also requires an experienced workman. When it is to be mixed with sand, the two materials must be thoroughly incorporated before water is added.

A stone, identical to that which the Roman cement is prepared, has been found at Boulogne, in France, and one similar in texture, and in being veined with carbonate of lime, at Cumberland in Maryland. The poor calcareous ores of iron, found in coal formations, have also been used in preparing a cement, which has all the properties of the Roman, and goes by the same name. The material whence Roman cement is prepared has also been used in England in the preparation of artificial stone. For this purpose the cement while still liquid is poured into moulds having the figure of architectural ornaments. A similar use has recently been made of the American hydraulic cements, under the sanction of a patent.

USE OF LIME IN AGRICULTURE.

(*a*) There are certain soils which contain inert animal or vegetable matter, which being insoluble is unfit for the food of plants. Quicklime has the property of hastening the putrefactive process, and will thus, by disposing the inert matter to enter into fermentation, render it capable of supporting the growth of plants.

(*b*) Some soils are charged with a small quantity of acid matter, which interferes with vegetation, except that of a few useless plants. This acid may be neutralized by lime, which may either be applied in the state of quicklime or of carbonate.

(*c*) Sandy soils may be barren in consequence of the rapidity with which moisture escapes from them; and clay soil in consequence of its forming tough clods in dry weather, and being too retentive of moisture. Both of these opposite defects may be remedied by lime, for this earth renders the toughest clay friable, and causes sand to be more retentive of moisture. Quicklime will act most powerfully in both these cases, but the carbonate is not inefficient.

(*f*) The seeds of the cereal granima all contain lime in combination with acids. Their stalks also contain it, but in less proportion. Wheat is the grain which contains most of this earth. Hence none of these valuable vegetables will flourish except in soils which contain lime, and some soils which are fertile in grass, may be incapable of bearing grain; or those which yield a tolerable product of the less valuable grains, may refuse to bear wheat. As the lime enters into the constitution of the plants, the calcareous matter of the soil will be gradually exhausted, and hence it has been found that even under careful management, wheat has gradually ceased to be a profitable crop in the older parts of the United States. Animal manures contain the phosphate of lime, and thus convey to the soil some of this earth, but not in quantities sufficient to maintain a soil in condition for wheat. Carbonate of lime ought therefore to be applied from time to time, or slacked lime spread upon the ground, and ploughed in, after it has attracted carbonic acid from the air.

(*g*) Lime and its carbonate have also the property of condensing the gases which arise from putrefying vegetable and animal substances, and of combining with other products of their decomposition. Hence the native fertility of calcareous soils will continue much longer than that of other descriptions, and the effects of vegetable and animal manures will be more permanent if applied to a soil containing lime, or in combination with that earth or its carbonate.

In England and Scotland, as much as 400 bushels of slacked lime have been advantageously applied to clay soils, and 200 bushels to sands. In this country the use of lime has been chiefly confined to the farmers of German origin, in Pennsylvania, and their descendants in other States. The proportion has rarely exceeded 40 bushels per acre; but while in England the effect of the larger quantity lasts for more than the life of man, the less quantity in America is renewed as a preparation for every wheat crop.

The best mode of applying lime is that practised in La Sarthe, (France.) Here, slacked lime, in the proportion of no more than 12 bushels per acre, is made into a compost with sods.

Pulverized limestone may be used for most of the purposes for which slacked lime is applied, for, except when it is wished to promote the decomposition of inert organic matter, or to render a clay soil speedily friable, the caustic earth is unnecessary, and occasionally injurious; but it is generally cheaper to reduce limestone to powder by calcination and slacking than by mechanical means. In Europe, however, chalk is used as a manure.

The true marl, or mixture of carbonate of lime and clay, is also a valuable manure, as are the shells found in the green sands of the seaboard of the United States, which are improperly termed marls.

The magnesian limestones ought, if calcined, to be applied with great caution, as magnesia when deprived of carbonic acid is destructive of vegetation, and as it attracts that acid from the atmosphere much less rapidly than lime does. In small quantities, however, or if exposed until the whole of the magnesia has been carbonated, the magnesian limestones yield a valuable manure.

Lime, even if pure, must be applied with caution to soils which have never before been subjected to its action. The dose may be increased at each successive application, and it is more efficacious, and may be applied in greater quantities, when animal or vegetable manure is used at the same time. But it must not be mixed previously with stable or barn-yard manure, as much of the value of that substance will bd destroyed by the rapid decomposition induced by lime. This rule does not apply to carbonate of lime, and therefore marl, in particular, may be mixed to great advantage with dung-hills, and used to form a bed in barn-yards, for the purpose of absorbing liquid manure, and the gases generated in the putrefaction of the litter.

FARMS FOR SALE.

IN the towns of Beekman, Dover, and Union-Vale, belonging to Mr. DELAFIELD.

The COUNTRY SEAT now occupied by Mr. Charles Delafield, is beautifully situated on a rise of land, commanding a fine prospect. This farm contains 131 acres.—The soil is of the first quality, and easily cultivated. The buildings are entirely new, and cost $6,000. The grounds are in fine order. On this farm is a very fine orchard; also a variety of fruit. A large proportion of this farm is meadow land.

Also, THREE FARMS of 740 acres, with good buildings, viz: dwelling house, three barns, and other out buildings, all in good repair—450 acres now under cultivation, besides 100 acres meadow land. The timber land is mostly very heavy, consisting of oak and chestnut timber; the rest is second growth and very thrifty. On the premises are a *saw mill* and good orchard. This farm is pleasantly situated and may be divided into lots to suit purchasers. It is a very fine grazing farm.

Also, a FARM of 140 acres, 100 acres now under cultivation 25 acres meadow land. The land is easy to till. There are fine orchards and a great variety of fruit on this farm. Buildings good. This may also be divided into smaller lots.

Also, a FARM of 80 acres; about 50 acres under cultivation, and 15 acres of meadow land. The soil of the best quality. Has fine orchards and good timber land.

Also, TWO FARMS of 120 acres; 60 acres improved land of an excellent quality. It has some fine timber land and good orchards.

Also, a FARM of 200 acres situated in the neighborhood of some of the pleasantest and best farms in Duchess county. It has 150 acres of land under cultivation, and as good soil as any in Duchess county. The view from this farm is splendid, and forms a desirable spot for a gentleman's country seat. It has good buildings and out-houses, and some fine timber land.

Also, a FARM of 34 acres, all under cultivation, of the finest quality of land.—This farm lies directly on the new turnpike road. On it is a commodious dwelling house, and now occupied as a tavern. The out-buildings are very good.

Also, a FARM of 240 acres, of an excellent quality, about 160 acres of improved land. This farm lies directly on the turnpike. The buildings are very good, being built last year. The timber is heavy, and the farm is in good fence.

Also, a FARM of 240 acres, beautifully situated, 130 acres under cultivation. The soil is of a very fine quality. Buildings nearly new and in good order. There are two new barns on this farm.

Also, a FARM of 210 acres of a strong, deep soil of land, about 130 acres under cultivation. Buildings good. The farm is almost all meadow land, and has good orchards. It can be divided.

Also, a FARM of 400 acres; 50 acres of it is improved land and of good quality; about 200 acres of heavy timber land, and can be divided to suit purchasers.

Also, 500 acres of heavy TIMBER LAND, near the Dover Iron Works, and adjoining the red mill of Thomas Vincent.

For terms apply to JAMES MILLS and JONATHAN P. CLARK, Poughkeepsie BENJAMIN SHERMAN, Clove, Union-Vale; GRANT THORBURN, New-York; or to

CHARLES DELAFIELD,
On the premises.

☞ The above farms will be sold very low. Oct. 15, 3 times.

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Arrangements are now making by which we shall secure to our readers original articles of great authority. No pains will be spared in making the New-York Farmer and Gardener during the coming year, of more value to its reader.

We have received the November No., of the American Gardener's Magazine.

This work as usual contains much interesting and original matter. We have always read it with pleasure, but in the last number we find an article in relation to our Journal, the perusal of which has pained us much.

Our readers are aware that we have frequently copied articles from this work upon the subject of gardening, the exclusive province of that Journal, and only partly of ours. This has been done with a view to extend information upon such subjects, to many of our readers, who, in all probability never see the original work. This is done with no design to injure or in any way to infringe upon the rights of our contemporary. We at the time looked upon the work as one of great worth, and were far from imagining that by making its contents known among strangers to the periodical, we at all diminished its subscription list, as the proprietor seems to intimate.

But in the article above mentioned, derect and indirect accusations are made of "jealousy," "unfairness," "illiberality," &c., and with an evident acerbity of feeling, which is the more unpleasant to us, as it is unfounded, and as our feeling has been the very reverse. A great deal is said of credit not being given for some articles. This has been an omission unknown, until our attention was called by this very notice —such accidents will happen in the most carefully conducted establishments, and if any one has occasion to complain of such treatment, it is in our own case. Articles are copied, even editorial, into other journals, without the slightest notice, and even by their mode of insertion, passed off as original with them. This is "unfair" and "illiberal" to be sure—while in the cases mentioned by the editor of the Gardener's Magazine, the printing alone would show that the articles were not claimed as original.

Our feeling has been and still continues to be that of good will and friendship for this and all other of our contemporaries, and we are determined that no mistake of theirs shall disturb our good feeling.

It is to be hoped that our brethren in the east will be convinced of this fact, and that they will not again make so heavy a charge without reflection.